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Yamamoto et al.

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(54) **SEALED CASE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 134 days.

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(22) Filed: **Sep. 19, 2002**

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Sep. 21, 2001 (JP) 2001-288262

(51) **Int. Cl.**
B65D 85/66 (2006.01)

(52) **U.S. Cl.** **206/395**; 206/397; 206/413

(58) **Field of Classification Search** 206/395, 206/397, 413, 415, 416, 398; 220/8
See application file for complete search history.

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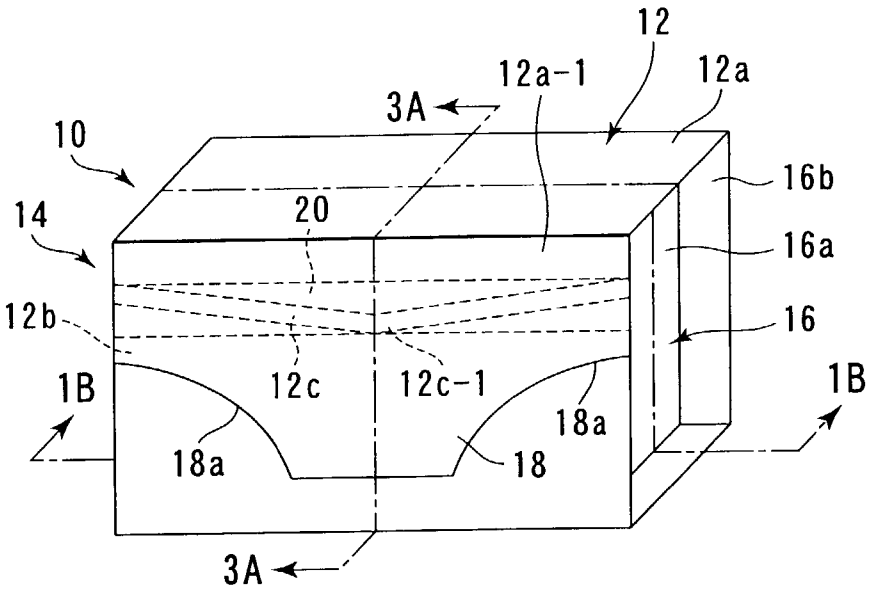
Primary Examiner—Shian T. Luong
(74) *Attorney, Agent, or Firm*—Sughrue Mion, PLLC

(57) **ABSTRACT**

A sealed case includes an elongated trunk member including an overlapped part made by overlapping parts of an inside end portion and an outside end portion apart from each other in a vertical axis direction of a sheet material and first and second end portions each provided with an opening and apart from each other. The overlapped part has a fixing area to fix the inside and outside end portions. First and second cover members are fixed to the first and second open end portions of the trunk member, closing the openings.

14 Claims, 11 Drawing Sheets



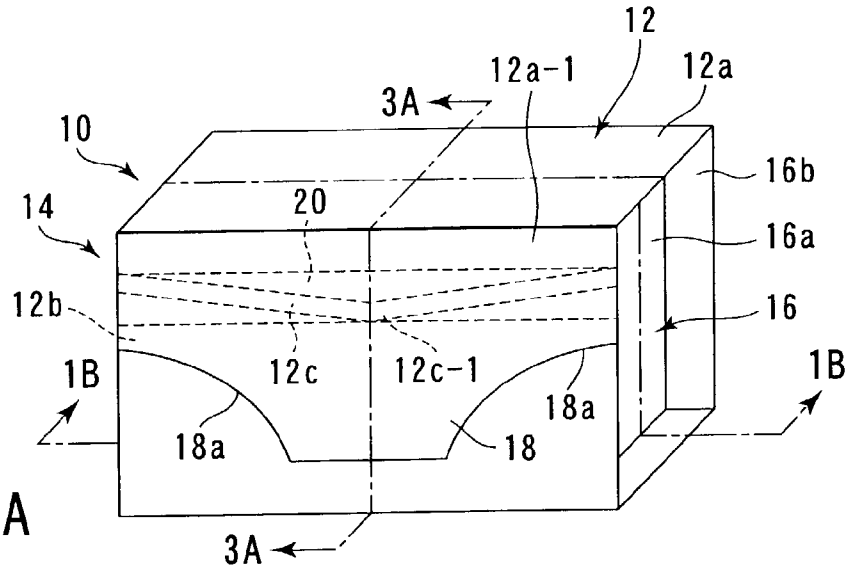


FIG. 1A

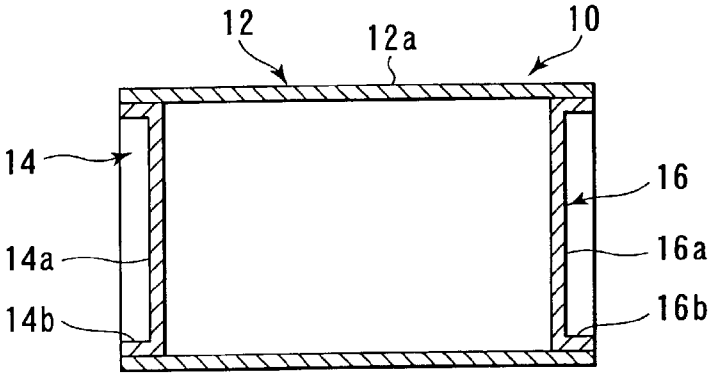


FIG. 1B

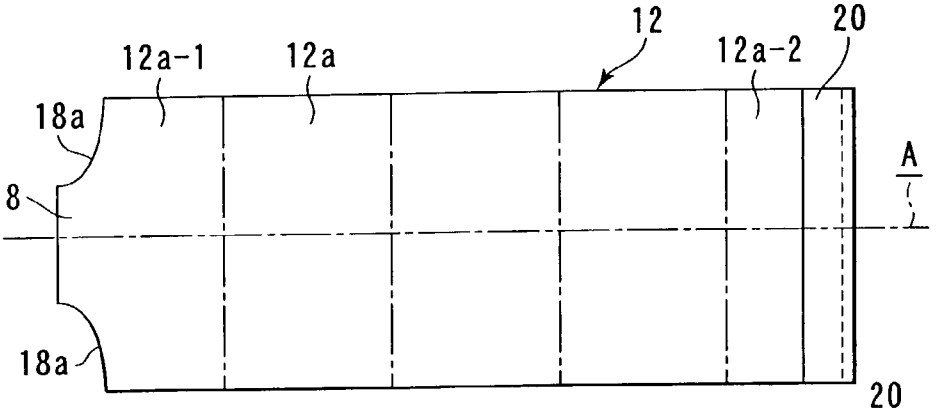


FIG. 2A

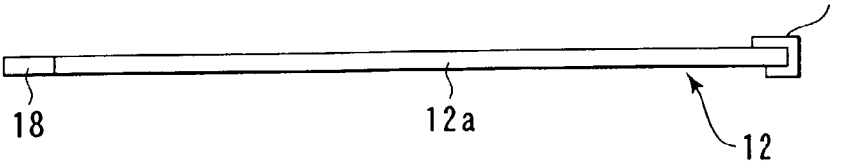


FIG. 2B

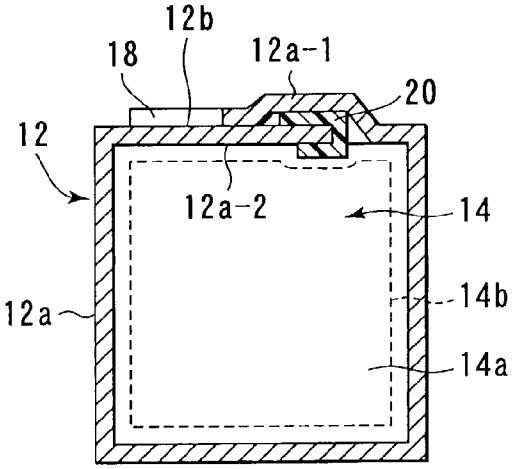


FIG. 3A

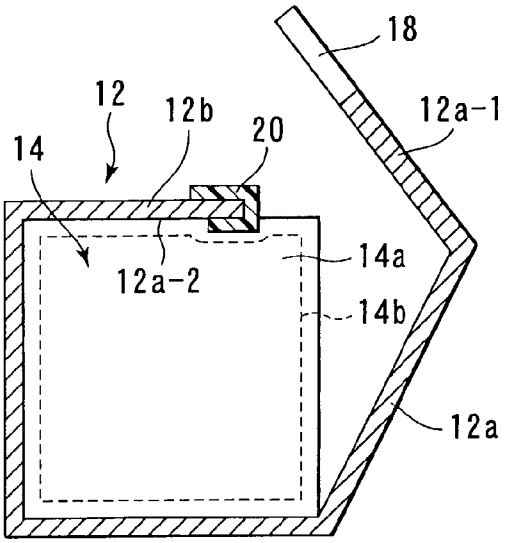


FIG. 3B

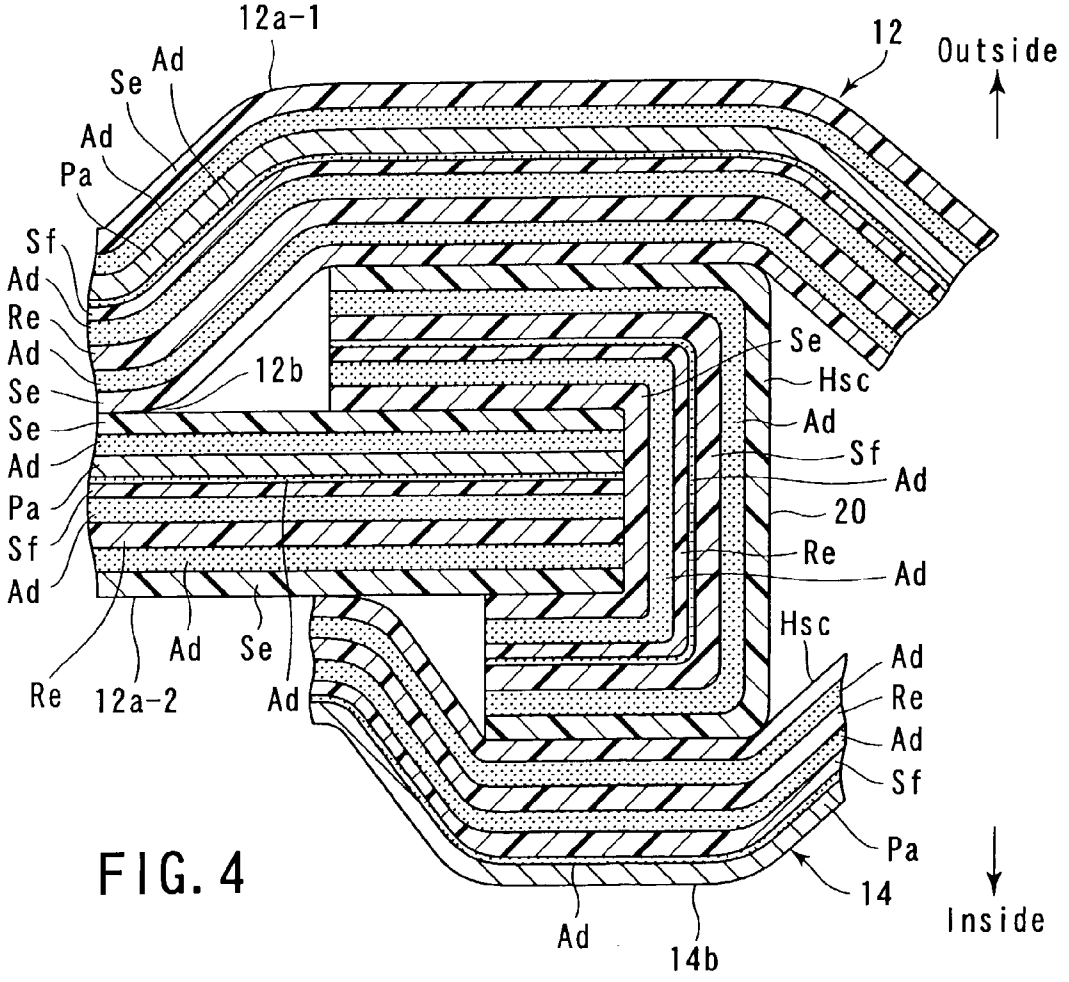


FIG. 4

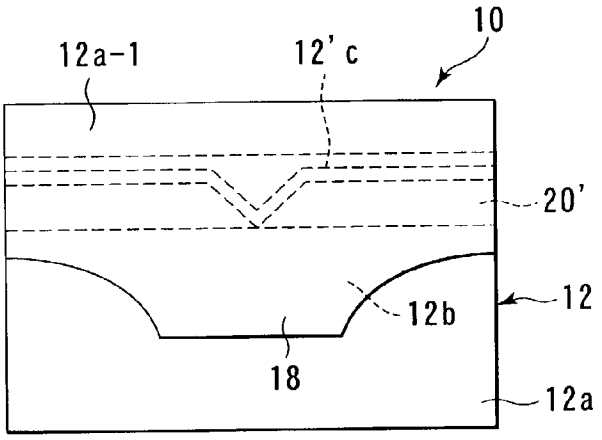


FIG. 5A

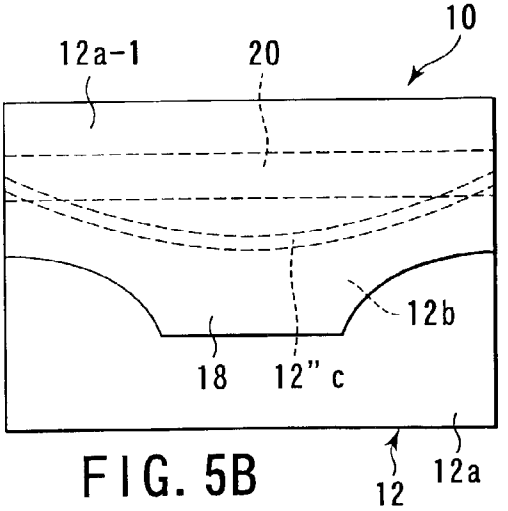


FIG. 5B

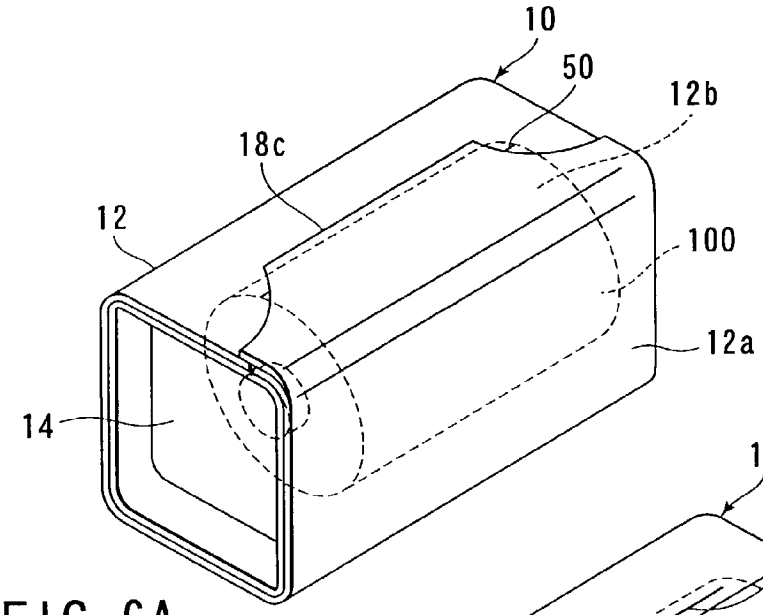


FIG. 6A

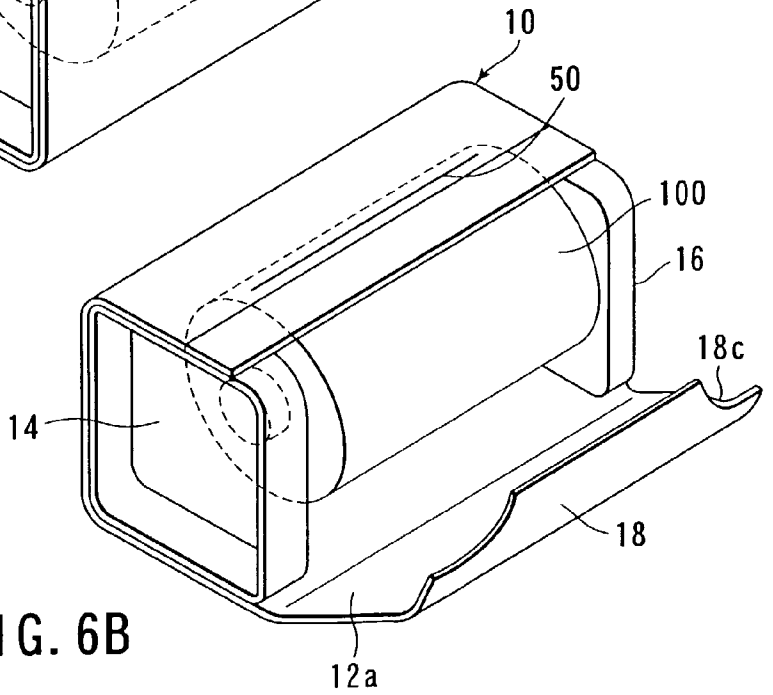


FIG. 6B

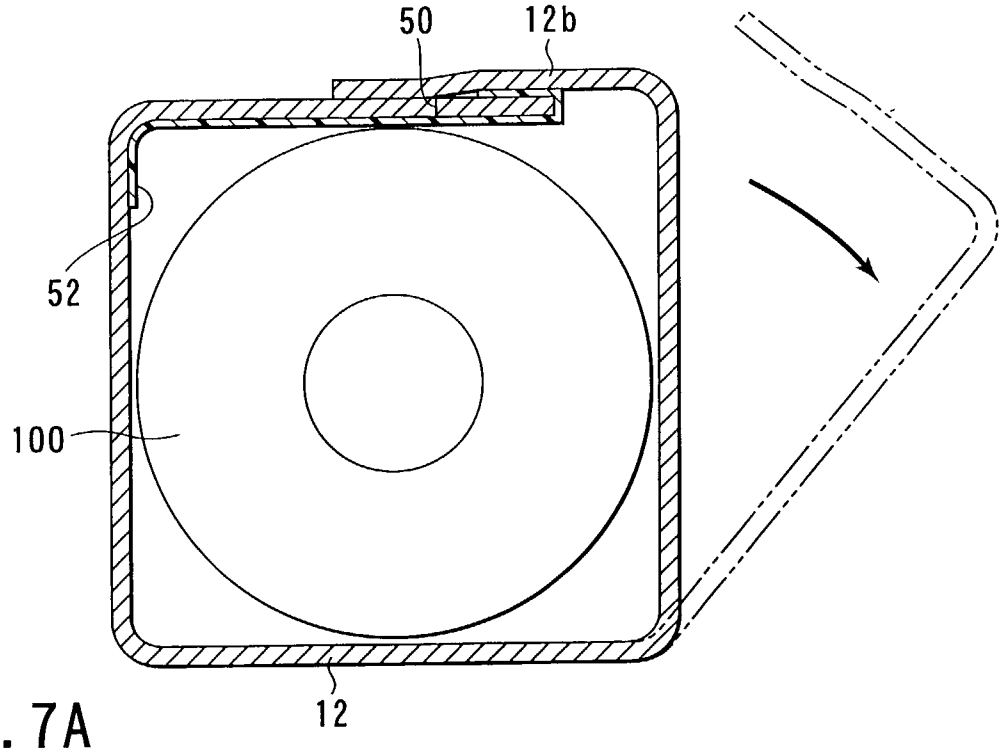


FIG. 7A

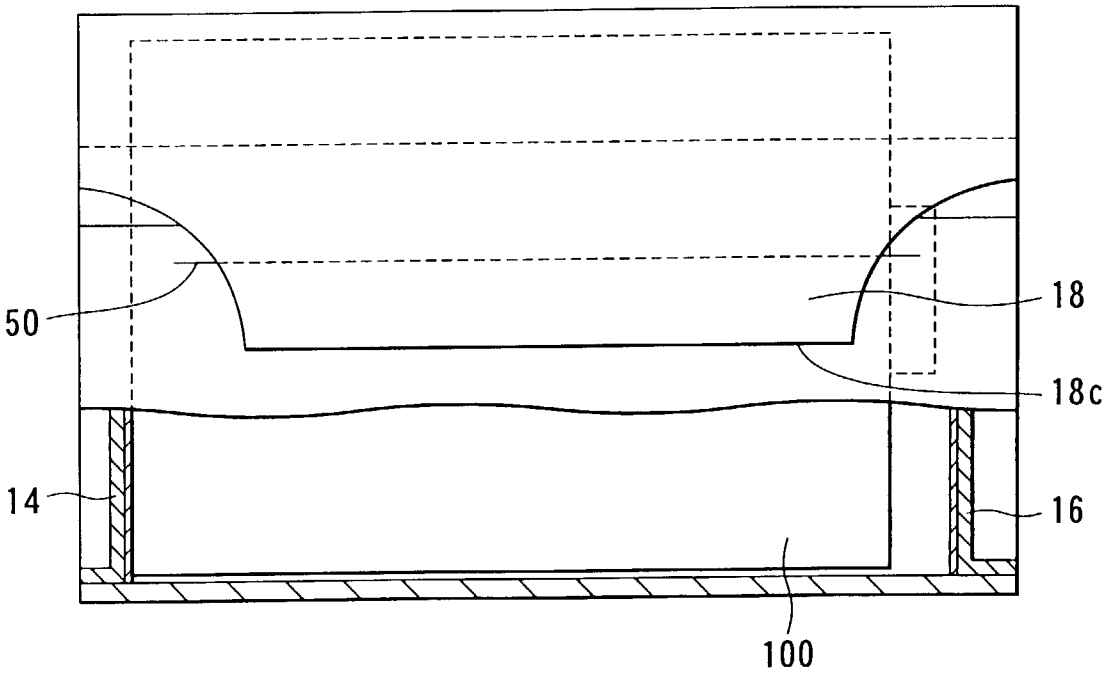


FIG. 7B

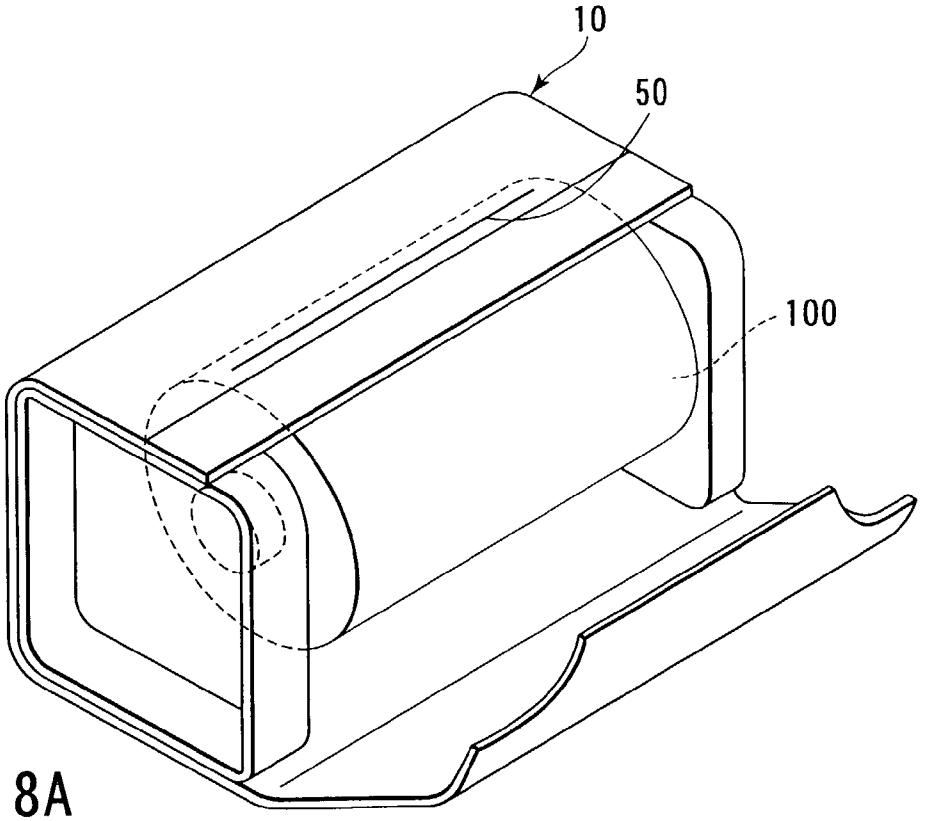


FIG. 8A

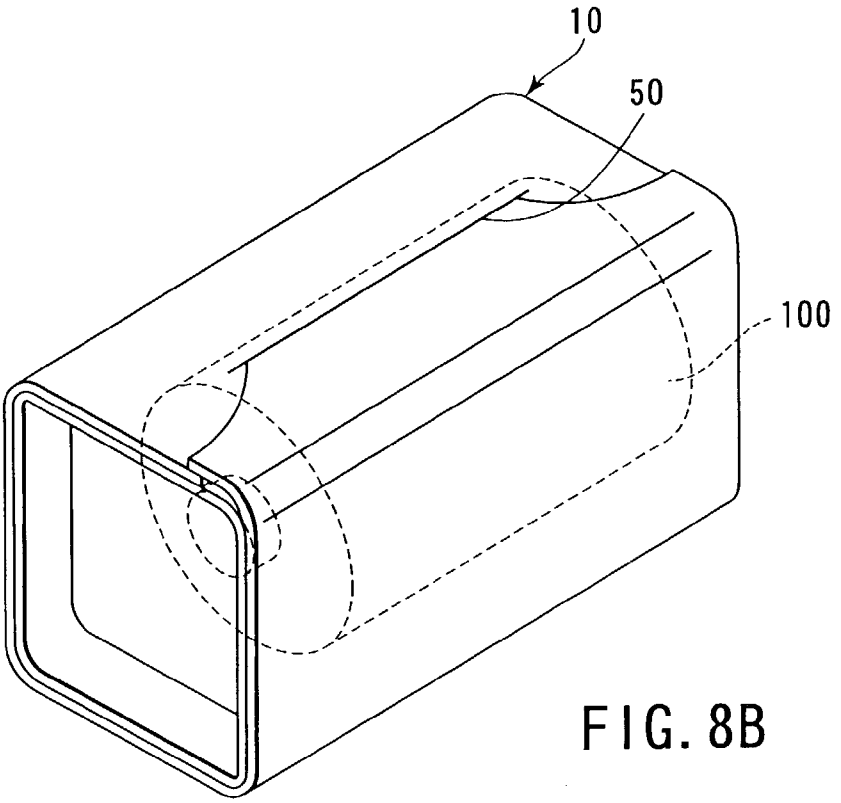


FIG. 8B

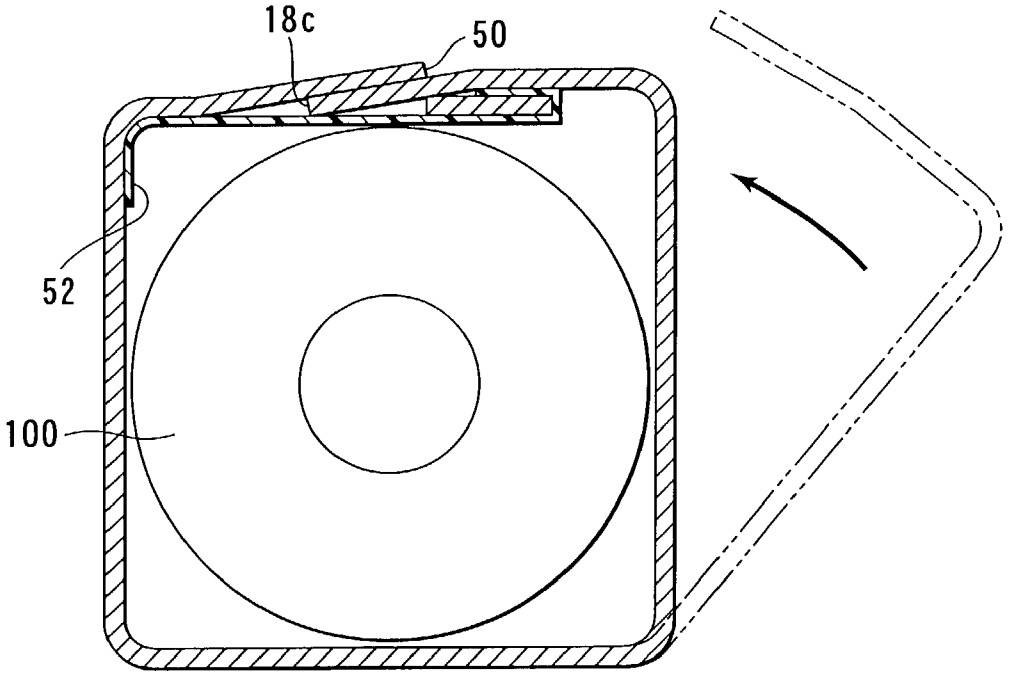


FIG. 9A

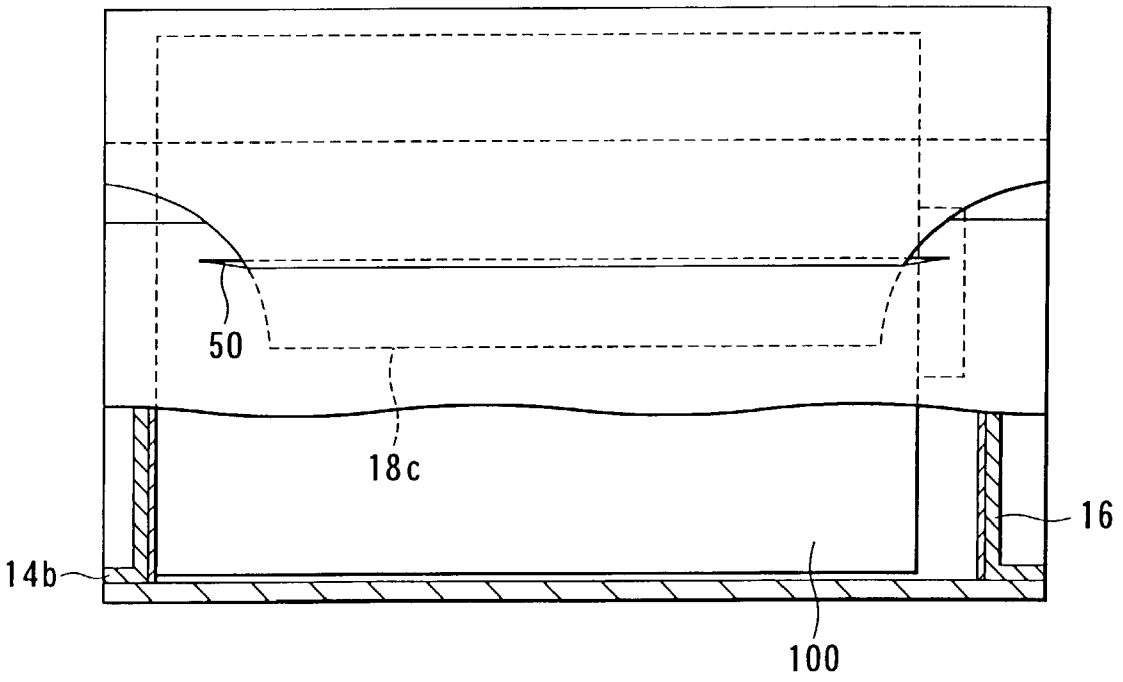


FIG. 9B

FIG. 10A

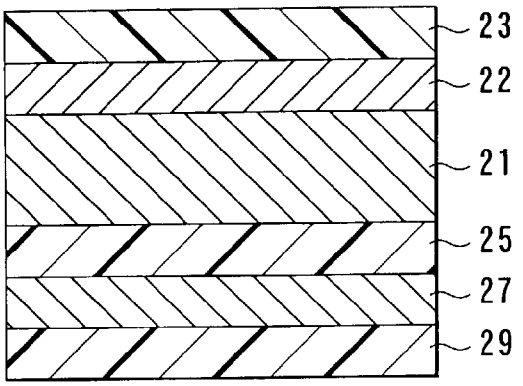


FIG. 10B

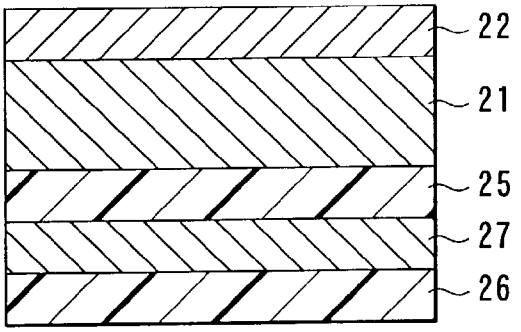


FIG. 10C

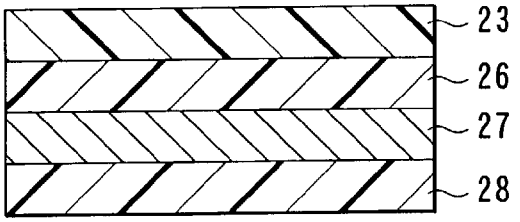


FIG. 11A

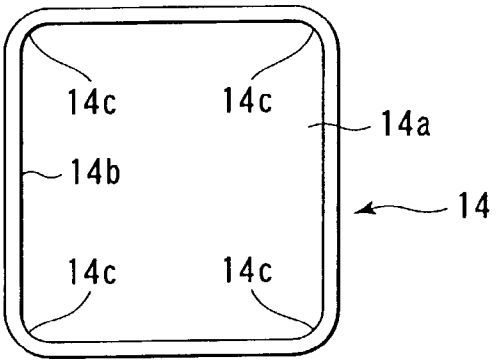
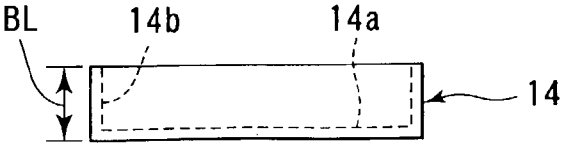


FIG. 11B



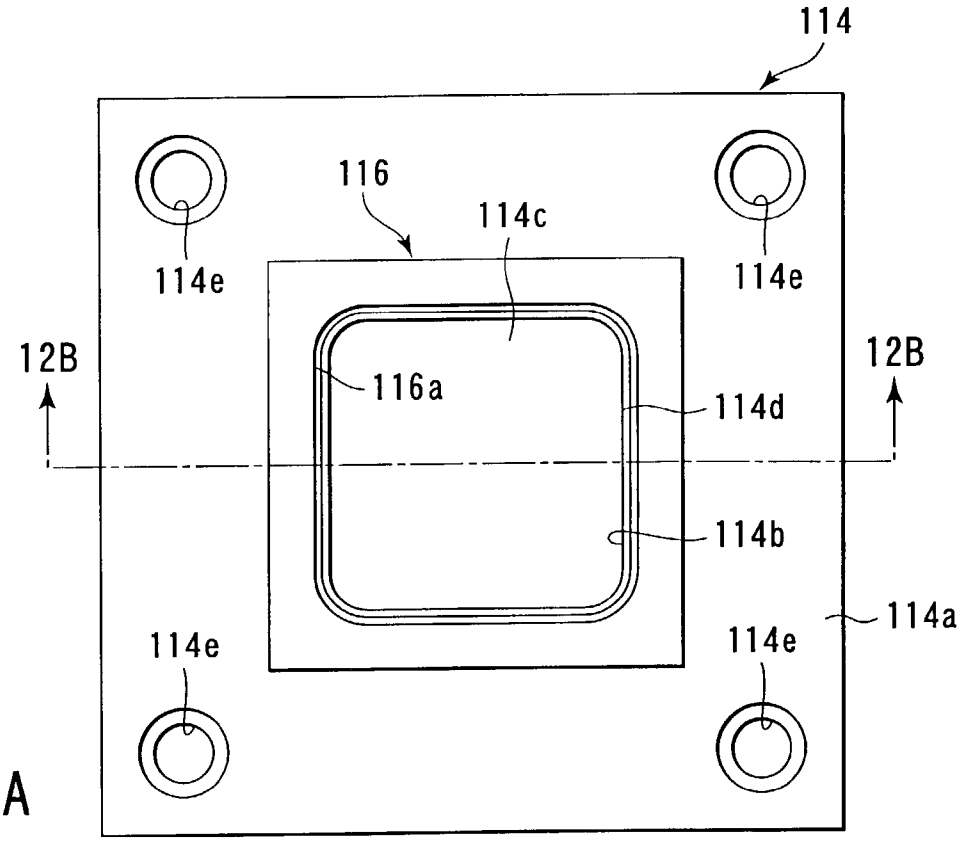


FIG. 12A

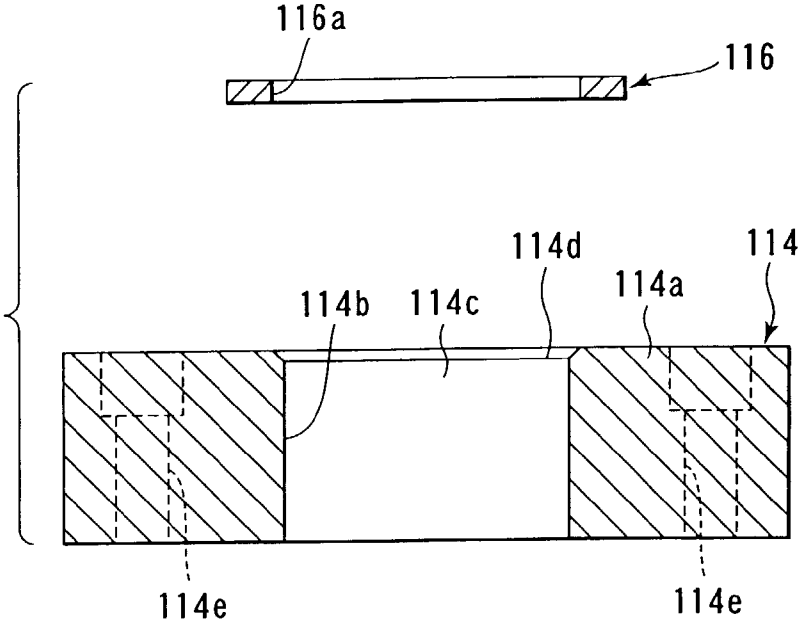


FIG. 12B

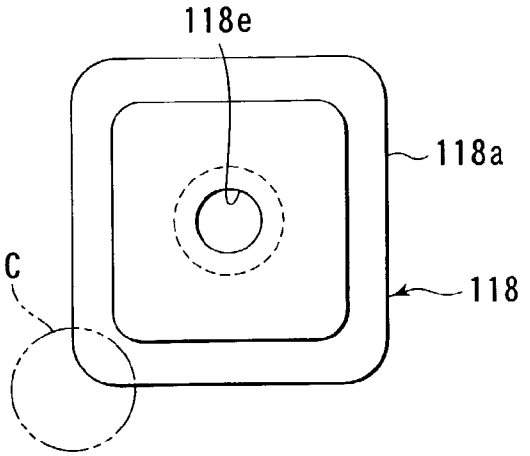


FIG. 13A

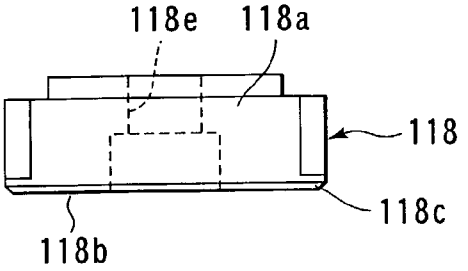
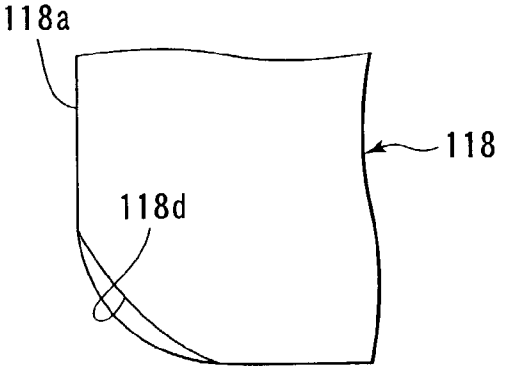


FIG. 13B



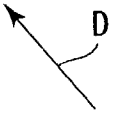


FIG. 13C

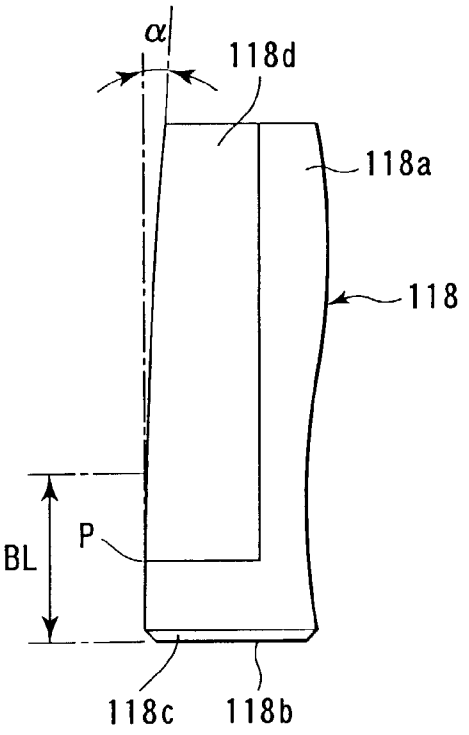


FIG. 13D

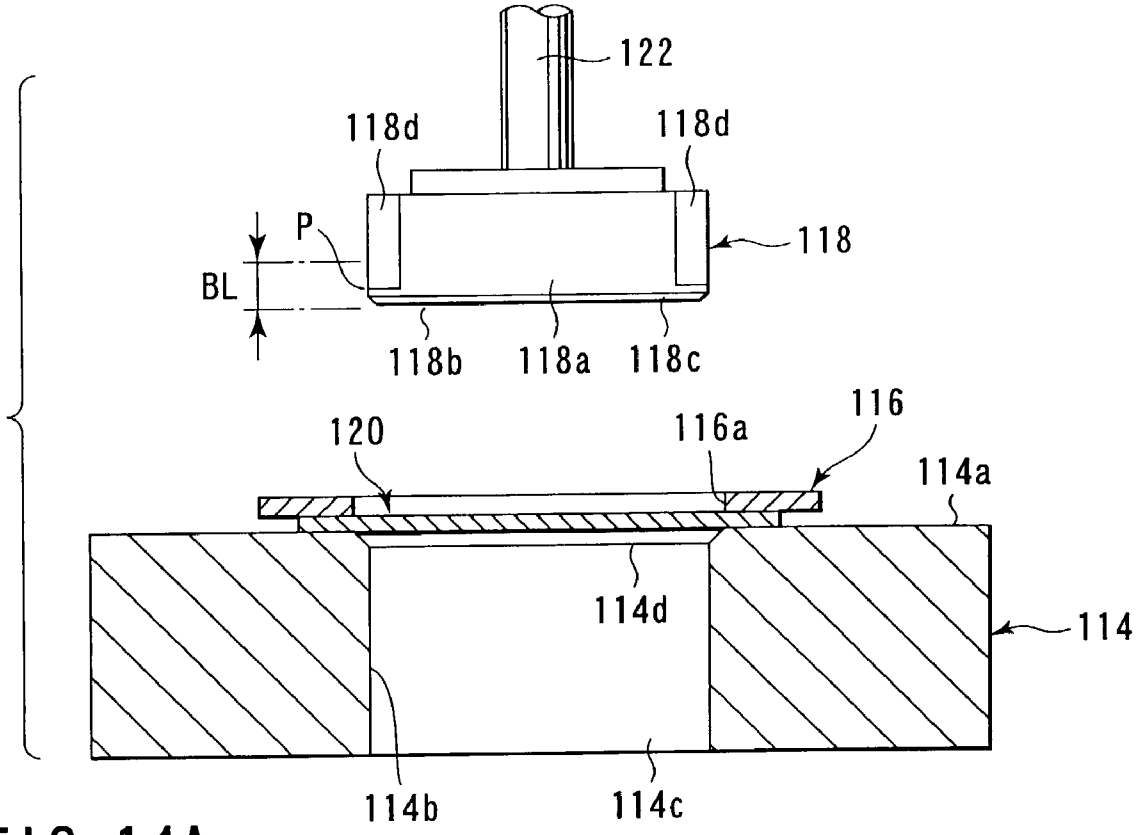


FIG. 14A

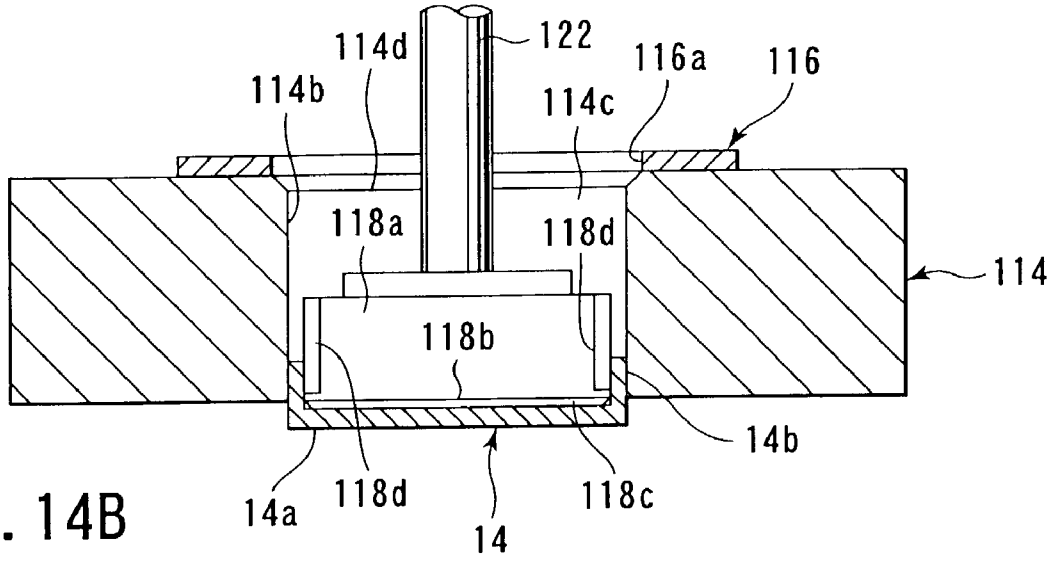


FIG. 14B

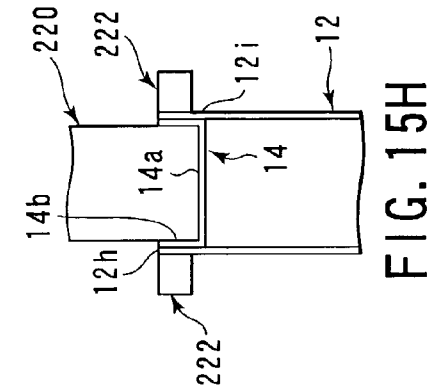


FIG. 15H

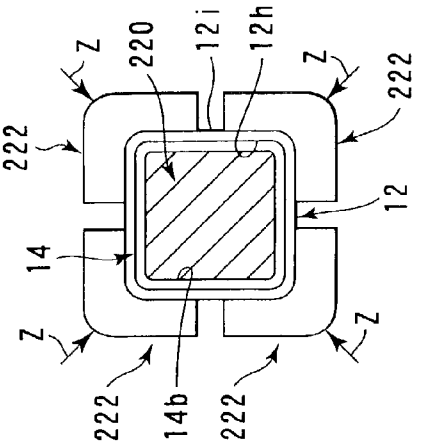


FIG. 15I

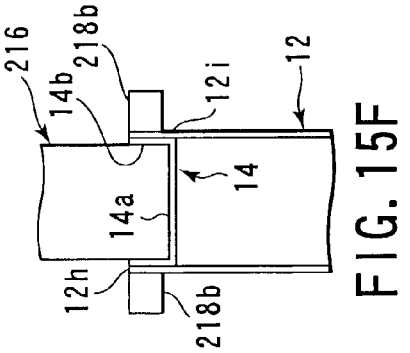


FIG. 15F

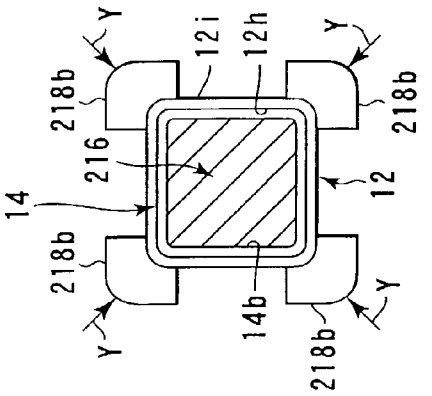


FIG. 15G

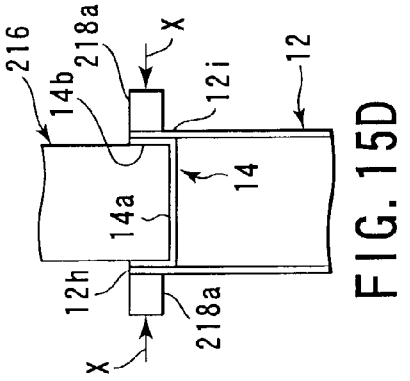


FIG. 15D

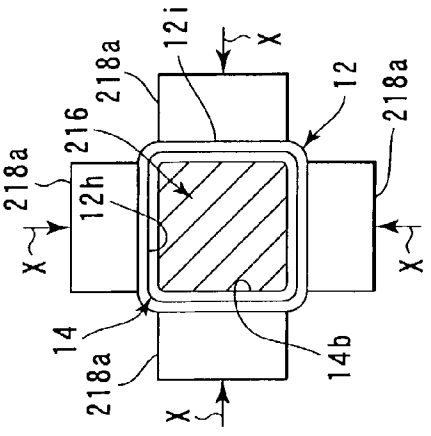


FIG. 15E

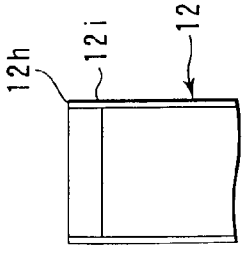


FIG. 15A

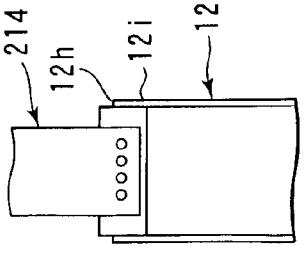


FIG. 15B

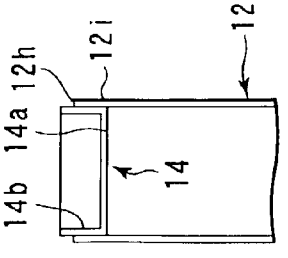


FIG. 15C

SEALED CASE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based upon and claims the benefit of priority from the prior Japanese Patent Applications No. 2001-287640, filed Sep. 20, 2001; and No. 2001-288262, filed Sep. 21, 2001, the entire contents of both of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a sealed case, and in particular to a sealed case comprising an elongated cylindrical trunk member with open end portions, a first cover member to close one open end portion of the trunk member, and a second cover member to close the other open end portion of the trunk member.

2. Description of the Related Art

Conventionally, a sealed case of the above-mentioned structure is made of a thick paper blank shaped as predetermined, for example. A blank is desirably as thin as possible to reduce the manufacturing cost of such a sealed case. However, use of a thin blank involves a rigidity problem, and limits the usage.

BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to provide a sealed case with excellent rigidity made of relatively thin material, or a blank.

In order to achieve the above object, one aspect of the present invention relates to a sealed case comprising an elongated trunk member including an overlapping part made by overlapping at least a parts of an inside end portion and an outside end portion apart from each other in a vertical axis direction of a sheet material having a vertical axis and a horizontal axis crossing the vertical axis, and first and second end portions each provided with an opening and apart from each other in a horizontal axis direction, and the overlapped portion having a fixing area to fix the inside and outside end portions;

first and second cover members made of sheet material and fixed to the first and second open end portions of the trunk member, closing the openings of the open end portions; and

a tongue member which is provided at the outside end portion of the trunk member and exposed to an outside, and when a tensile force is applied, releases the fixing of the outside and inside end portions and partially releases the fixing of the first and second open end portions and the first and second cover members, thereby unsealing the sealed case;

each of the first and second cover members including a main part having the substantially same shape and size as that of the cross section of the opening of the trunk member, and a rim provided in the circumference of the main part; and the main part of the cover member being located in each end portion of the trunk member, and the rim of the cover member is fixed to an inside surface of the end portion in a surface contact manner.

The overlapped part of the trunk member may be sealed in an air-tight manner.

The sealing may be made by a sealing tape which covers an end-face, a part of the inside and a part of the outside of the inside end portion, in the overlapped part of the both end portions of the material.

At least one of the part covering a part of the outside of the inside end portion and the inside of the outside end portion may be adjusted to obtain a desired strength of the fixing.

The part of the sealing tape covering the outside of the end portion may be fixed to the outside end portion along the horizontal axis all over the trunk material width.

The fixing may be made by heat sealing.

The overlapped part of the trunk member may be formed by heat sealing along the both end portions, and the seat sealing may be adjusted to obtain a desired fixing strength.

The fixing may be made so that the part corresponding to the tongue member is located closer to a tip of the tongue member than the other parts.

The each rim of the first and second cover members, or the internal circumference of the end portion of the trunk member, may be adjusted to obtain a desired heat sealing strength of each rim of the first and second cover members with respect to the inner circumference of the end portion of the desired length part adjoining the outside end portion.

The tongue member may be formed separately from the sheet material of the trunk member, and then may be fixed to the outside end portion of the trunk member.

The tongue member may be made of different sheet material from the material of the trunk member, and then may be fixed to the outside end portion of the trunk member.

The tongue member may be made of the same sheet material as the material, and may be fixed to the outside end portion.

The sheet material may be laminate of thick paper and metal or inorganic matter evaporated layer.

The trunk member is preferably closed by the second cover member after an article to be contained in the case is contained in the case, after the first opening is closed by the first cover member.

Additional objects and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the embodiments given below, serve to explain the principles of the invention.

FIG. **1**A is a schematic perspective view of a sealed case according to a first embodiment of the present invention;

FIG. **1**B is a schematic longitudinal sectional view taken along the line **1**B—**1**B of FIG. **1**A;

FIG. **2**A is a development view of an elongated trunk member of the sealed case of FIG. **1**A;

FIG. **2**B is a side view of the trunk member developed in FIG. **2**A;

FIG. **3**A is a schematic transverse sectional view taken along the line **3**A—**3**A of FIG. **1**A;

FIG. **3**B is a transverse sectional view of the sealed case of FIG. **3**A, being unsealed;

FIG. **4** is a magnified transverse sectional view of an overlapped part of the elongated trunk member material of the sealed case, together with a sealing tape provided on said overlapped part and a rim of a first cover member adjacent to said overlapped part;

FIG. **5**A and FIG. **5**B are schematic views showing different modifications of the fixing of both end portions at the overlapped part of the trunk member material of the sealed case according to a first embodiment of the present invention;

FIG. **6**A and FIG. **6**B illustrate a sealed case according to a second embodiment of the present invention, in which FIG. **6**A is a perspective view before unsealing, and FIG. **6**B is a perspective view after unsealing;

FIG. **7**A and FIG. **7**B are respectively sectional view and partially broken view of the sealed case of the second embodiment;

FIG. **8**A and FIG. **8**B are respectively perspective views of the sealed case of the second embodiment, being unsealed and being resealed;

FIG. **9**A and FIG. **9**B are respectively sectional view and partially broke view showing a state of resealing the sealed case of the second embodiment;

FIG. **10**A, FIG. **10**B and FIG. **10**C are sectional views of the lamination of substance usable as a sealed case of the present invention, in which FIG. **10**A shows the lamination of a trunk plate, FIG. **10**B shows the lamination of a sealing cover, and FIG. **10**C shows the lamination of a moisture-proof film;

FIG. **11**A and FIG. **11**B are respectively plane view and side view of the cover member of the sealed case of the embodiment of the invention;

FIG. **12**A is a schematic plane view of a female mold and a sheet material holder which are members of a cover member molding machine usable for molding the cover member of the unsealed case of the embodiment of the invention;

FIG. **12**B is a schematic sectional view taken along the line **12**B—**12**B of the female mold and sheet material holder of FIG. **12**A;

FIG. **13**A is a schematic plane view of a male mold which is another member of a cover member molding machine;

FIG. **13**B is a schematic side view of the male mold of FIG. **13**A;

FIG. **13**C is a schematic magnified plane view of the part encircled by the alternate long and two short dashes line indicated by a reference character C in the male mold of FIG. **13**A;

FIG. **13**D is a schematic magnified side view of the magnified part of FIG. **13**C viewed from the arrow D direction;

FIG. **14**A is a schematic longitudinal sectional view showing the process immediately before a cover member molding machine makes the cover member from the sheet material;

FIG. **14**B is a schematic longitudinal sectional view showing the process immediately after a cover member molding machine made the cover member from the sheet material; and

FIGS. **15**A through **15**I are views explaining an example of a method of fixing the cover member to the trunk member.

DETAILED DESCRIPTION OF THE INVENTION

First, a sealed case according to a first embodiment of the present invention will be explained with reference to FIGS. **1** to **4** of the accompanying drawings.

As shown in FIGS. **1**A and **1**B, a sealed case **10** according to a first embodiment of the invention comprises an elongated trunk member **12**, a first cover or member **14** which is fixed to one end portion or a first end portion of the trunk member **12** and closes an opening, a second cover member **16** which is fixed to the other end portion or a second end portion of the trunk member **12** and closes an opening, and a tongue or pick-up member **18** which is provided in the trunk member **12** and exposed to the outside.

As shown in detail in FIG **2**A, said trunk member **12** is made elongated by overlapping both end portions in a longitudinal direction (along the center longitudinal axis A) of a hermetic or airtight laminar material or a blank **12***a*. In this embodiment, these both end portions are fixed each other indirectly at their overlapped part **12***b* (FIG. **1**A), but they can also be directly fixed. The indirect fixing will be explained later in detail.

In this first embodiment, the cross section of the trunk member **12** is square, but it may be polygonal, circular or elliptical. That is, the shape is not specified.

Said tongue member **18** is formed to be integral with an outside end portion **12***a*-**1** of said both end portions of the blank **12***a*, just like projecting therefrom. When the blank is assembled with the trunk member, the tongue member **18** projects from the edge of the inside end portion **12***a*-**2**, or the other end of said both end portions, as shown in FIG. **1**A. This projection (along the longitudinal axis A) of the tongue member **18** is long enough to permit one finger to be inserted between the tongue member **18** and the inside end portion **12***a*-**2** and to pinch the tongue. Both side edges **18***a* of the tongue member between a tip of the tongue member **18** and both side edges (the edges isolated along the horizontal axis orthogonal to the vertical axis A) of the material **12***a* are arc-shaped. This arc-shape is preferably a curve whose radius of curvature gradually increases from the grip member tip toward the side edges of the sheet **12***a*. Such a curve will prevent a crack in the boundary between the central portion of the tongue member which is not secured or fixed to the inside end portion **12***a*-**2** and the both end portions which has the side edges **18***a* of the tongue member secured or fixed to the inside end portion, when the tongue member **18** is pinched and pulled outward (vertically and upward against the paper surface in FIG. **1**A) in order to unseal the case. When there is no possibility to occur such a crack, the shape of the tongue member is not specified. For instance, when only the central portion of the tongue member projects as in this embodiment, the tongue may project at a right angle or at a certain angle. The central portion is not necessarily be projected. It is permitted to make all edges the same width.

In this embodiment, the tongue member is made in one piece with or integral with the outside end portion **12***a*-**1**, but it is separated from the material **12***a*, and it can be fixed at an optional position on the outside of the outside end portion **12***a*-**1** by heat sealing, adhesive or other known fixing means.

To enhance the hermeticity in the overlapped part **12***b* of the above-mentioned both end portions **12***a*-**1** and **12***a*-**2** of the material **12***a*, the end-face of the inside end portion **12***a*-**2** is covered by a sealing tape **20** throughout the elongate direction of the trunk member **12** (the width

direction of the blank **12***a* or along the horizontal axis). Namely, this sealing tape is wound around the edge portion from the outside near the edge of the inside end portion **12***a*-**2** toward the inside passing through the end-face, as shown in FIG. **3**A.

The sealing tape **20** preferably shuts off leakage of the air or vapor, which flows even a little into the air penetrative material contained in the sheet **12***a* from the both ends exposed to the outside space in the longitudinal direction of the trunk member **12** in the inside end portion **12***a*-**2**, from the end-face along the circumferential direction of the trunk member **12** into the inside space of the trunk member.

Although the sealing tape **20** indirectly fixes the outside (outer surface) of the inside end portion **12***a*-**2** and the inside (inner surface) of the outside end portion **12***a*-**1** of the trunk member **12**, which are opposite to each other, the outside and inside may be directly fixed (without using a sealing tape). It is also permitted to mix direct and indirect fixings. Heat sealing can be used to fix the sealing tape **20** and/or the outside of the inside end portion **12***a*-**2** and the inside of the outside end portion **12***a*-**1**. If the degree of sealing demanded by the sealed case **10** is low, adhesive may be used. The fixing may be continuously or discontinuously made over all area in the longitudinal side of the trunk member.

The pattern of above fixing part is shaped like a strip region inclining so that the center portion **12***c*-**1** comes close to the tongue member **18** in the longitudinal direction of the trunk member as indicated by dotted lines **12***c* in FIG. **1**A. However, the shape is not limited by this pattern. It may be shaped as shown in FIG. **5**A and FIG. **5**B later. The shape is not specified.

With the shape shown in FIG. **1**A, when a tensile force is applied to the tongue member **18**, the force is first concentrated on the portion **12***c*-**1** most close to the end of the tongue member **18** in the fixing area **12***c*, and when the force is continuously applied to the tongue, the fixing will be easily released toward the portions on both sides of the portion **12***c*-**1**.

When the fixing is released using the tongue member **18**, the fixing strength of the outside of the sealing tape **20** or the inside of the outside end portion **12***a*-**1** can be adjusted, so that the sealing tape **20** and/or the outside of the inside end portion **12***a*-**2** and the inside of the outside end portion **12***a*-**1** can be more easily released. If the heat sealing is used for the above-mentioned fixing, the fixing strength of the heat sealing is adjusted.

When a tensile force is applied to the tongue member **18**, the fixing of the outside end portion **12***a*-**1** to the inside end portion **12***a*-**2** at the overlapped part **12***b* can be released, regardless of whether the fixing is indirect as explained above or direct by various known means not affecting the hermeticity of the material **12***a* by overlaying the outside end portion **12***a*-**1** on the inside end portion **12***a*-**2**. Moreover, by adjusting the fixing strength, the fixing strength can be always controlled to a desired level.

Said first cover member **14** is made of a sheet or laminar material with hermeticity or air tightness, and includes a flat main part **14***a* which is made in the substantially same shape and size as the cross section of the opening at one end of the trunk member **12**, and a rectangular cylindrical projection or rim **14***b* which is provided in being bent 90° against the main part in the circumference of the main part **14***a*. The main part **14***a* is disposed in the opening at one open end portion of the trunk member **12**, and the rectangle projection **14***b* is fixed to the inner circumference of said one end. This fixing is made so that the projection **14***b* is located outside of the trunk member against the main part, as shown in FIG. **1**B. The projection **14***b* projects all over the circumference of the main part **14***a*, but the projection can be limited only to the necessary portion or portions of the circumference.

Although the fixing of the projection **14***b* of the first cover member **14** to the inner circumference of one open end portion of the trunk member **12** is made by the continuous heat sealing all over said inner circumference in this embodiment, an adhesive can be used instead of the heat sealing depending on the degree of hermeticity required as the sealed case **10**, and the fixing can be made discontinuously to said inner circumference using adhesive or heat sealing.

The second cover member **16** has the same structure as the first cover member **14**, having a main part **16***a* and a projection or rim **16***b* integrally provided around the main part **16***a*, and closing the other open end portion of the trunk material **12**.

In the inner circumference of said both end portions of the trunk member **12** or in the projections **14***b*, **16***b* of said both cover members, the part adjoining the outside end portion **12***a*-**1** of the overlapped part **12***b* in the material **12***a* of the trunk member **12** is adjusted to obtain a desired fixing strength.

When opening the sealed case **10** comprising a trunk member **12** made cylindrical of hermetic laminar material **12***a* and cover members **14**, **16** closing the both open end portions of the trunk member, pinch the tongue member **18** and pull it out from the case. As a result, the fixing of the outside end portion **12***a*-**1** to the inside end portion **12***a*-**2** of the case is released first, and if the outside of the sealing tape **20** of the inside end portion **12***a*-**2** is fixed to the inside of the outside end portion **12***a*-**1**, this fixing is then released, and finally the fixing of at least the part adjoining the outside end portion **12***a*-**1** of the projections **14***b*, **16***b* of the cover members located at both end portions of the trunk member **12** is released, as shown in FIG. **3**B.

Further, as described above, these fixings can be adjusted to a desired fixing strength, and even if the degree of sealing demanded by the case **10** is severe and the fixing is made tight, a relatively small tensile force to the tongue member **18** is required when releasing the fixing or when opening the sealed case. Thus, the sealed case **10** of this embodiment can be easily opened by women, aged or children except infants who are considered to have less power compared to adult men.

Referring now to FIG. **4**, description will be given on the examples of the sheet materials of the members of the above-mentioned first embodiment: the hermetic laminar material **12***a* of the trunk member **12**, the hermetic laminar material of the first and second cover members **14**, **16**, and the material of the sealing tape **20**.

In the above-mentioned first embodiment, the sheet material **12***a* is made of paper, preferably thick paper as a base material Pa, and sealant Se is laminated thereon via an adhesive layer Ad. The adhesive layer Ad can be formed by urethane group adhesive or polyolefin for lamination such as polyethylene. Sealant Se can be formed by polyethylene or polyolefin such as polypropylene.

The underside of the paper base material Ps is laminated by an adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and sealant Se in this sequence. The seal film Sf can be formed by various known hermetic materials depending on the degree of demanded hermeticity. In this embodiment, it is formed by an inorganic material evaporated film or an aluminum film. For example, it is formed by evaporating inorganic oxide represented by aluminum oxide or silicon oxide on a base

material such as polyester film to a thickness of 20–150 nanometers by vacuum evaporation or the like. Such a seal film Sf is airtight hermetic (gas-barrier or gas-tight). The adhesive layer Ad and sealant Se are as explained above. The reinforcement film Re is a film made of nylon or polyethylene terephtalate.

From the above description, it can be understood that the sheet material **12***a* of this embodiment is made by sequentially laminating sealant Se, adhesive layer Ad, paper base material Pa, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and sealant Se from outside to inside.

As shown in FIG. **4**, the sealant Se of the inside of the outside end portion **12***a*-**1** is adjacent to the sealant Se of the outside of the inside end portion **12***a*-**2** in the trunk member **12**. Therefore, when fixing the inside of the outside end portion **12***a*-**1** directly to the outside of the inside end portion **12***a*-**2** as stated before, they can be fixed by various known means, adhesive and heat sealing, for example, not affecting the hermeticity of the sheet **12***a* when overlaying the sealant Se of the outside end portion **12***a*-**1** on the sealant Se of the inside end portion **12***a*-**2**.

Said reinforcement film Re is omissible together with one adhesive layer Ad adjacent thereto, depending on the application purpose of the sealed case **10**.

The laminar material having the hermeticity common to the cover members **14**, **16** of this embodiment is formed by sequentially laminating paper base layer Pa, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and seat seal strength control film Hsc in this sequence from the outside opposite to the inner circumference of the end of the trunk member **12** toward the inside facing to said inner circumference, as shown magnified in FIG. **4**.

The heat seal strength control film Hsc has been well known as a polyolefin group releasing agent or a releasing agent for coating such as hot melt and heat seal lacquer.

The cross section of the cover member **14** shown in FIG. **4** is the cross section of the projection **14***b* fixed to the inner circumference of one end of the trunk member **12**. In the cross section of the main part **14***a*, the paper base layer Pa is disposed at the outermost side in the opening of one open end portion of the trunk member **12**, and the heat seal strength control film Hsc is disposed at the innermost side.

Also, in the laminar material with hermeticity common to the cover members **14**, **16**, the reinforcement film Re is omissible together with one adjacent adhesive layer Ad, depending on the application purpose of the sealed case **10**.

In this embodiment, the projected strips **14***b* and **16***b* are fixed to the sealant Se of the inner circumference of the end of the trunk member **12** by heat sealing via the heat seal strength control film Hsc facing to said inner circumference.

The sealing tape **20** is formed by laminating heat seal strength control film Hsc, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and sealant Se in this order, from the end-face of the inside end portion **12***a*-**2** of the trunk member **12** to the inside and upper side adjoining this end-face.

Also, in the sealing tape **20**, the reinforcement film Re is omissible together with one adjacent adhesive layer Ad, depending on the application purpose of the sealed case **10**.

In the sealing tape **20** of this embodiment, the inside sealant Se is fixed by heat sealing with respect to the adjacent part of the end of the inside end portion **12***a*-**2** of the trunk member **12** and the outside sealant Se and the adjacent part of the inside sealant Se and said end-face.

In the sealing tape **20**, as shown in FIG. **4**, the adjacent part of said end-face of the outside of the sealing tape **20** is fixed to the inside sealant Se of the outside end portion **12***a*-**1** of the trunk member **12** via the outside heat seal strength control film Hsc. Similarly, the adjacent part of said end-face of said inside of the sealing tape **20** is fixed to the inside heat seal strength control film Hsc of the projections **14***b*, **16***b* of the cover members **14**, **16** via the outside heat seal strength control film Hsc.

The laminar material **12***a* with hermeticity and/or air tightness of the trunk member **12** is formed by laminating sealant Se, adhesive layer Ad, paper base material Ps, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and heat seal strength control film Hsc in this order from the outside toward the inside. When the inside of the outside end portion **12***a*-**1** is fixed directly to the outside of the inside end portion **12***a*-**2** by heat sealing in the overlapped part **12***b* of the trunk member **12**, the heat seal strength control film Hsc of the inside of the outside end portion **12***a*-**1** can be directly fixed to the sealant Se of the outside of the inside end portion **12***a*-**2**. In this case, also, the reinforcement film Rf is omissible together with one adjacent adhesive layer Ad, depending on the application purpose of the sealed case **10**.

In this modification, the laminar material of the first and second cover members **14** and **16** is formed by laminating a paper base layer Pa, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and sealant Se in this order, from the outside opposite to the inner circumference of the end of the trunk member **12** toward the inside facing said inside. Therefore, since the cross section of the material of the first cover member **14** shown in FIG. **4** is the cross section of the projection **14***b* fixed to the inner circumference of one end of the trunk member **12** in the first cover member **14**, the paper base layer Pa is disposed outermost in the opening of one open end portion of the trunk member **12** in the cross section of the main part **14***a*, and the sealant Se is disposed at the innermost side. In this case, also, the reinforcement film Rf is omissible together with one adjacent adhesive layer Ad, depending on the application purpose of the sealed case **10**.

In the projections **14***b* and **16***b* of the cover members of this modification, the inside sealant Se is fixed by heat sealing to the heat seal strength control film Hsc of the inner circumference of the end of the trunk member **12**.

Further, the sealing tape **20** of this modification is formed by laminating sealant Se, adhesive layer Ad, seal film Sf, adhesive layer Ad, reinforcement film Re, adhesive layer Ad and sealant Se in this order, from the end-face and outside of the inside end portion **12***a*-**2** of the trunk material **12** and the outside opposite to the adjacent part of said end-face in the inside, to the said end-face and the inside facing said adjacent part.

In this case, also, the reinforcement film Rf is omissible together with one adjacent adhesive layer Ad, depending on the application purpose of the sealed case **10**.

Namely, in the sealing tape **20** of this embodiment, the inside sealant Se is fixed by heat sealing to the end-face of the inside end portion **12***a*-**2** of the trunk member **12**, the adjacent part of said end-face in the outside sealant Se and the adjacent part of said end-face in the inside heat seal strength control film Hsc.

Further, in the sealing tape **20**, the part adjacent to the outside end portion-face fixes the outside sealant Se by heat sealing to the inside heat seal strength control film Hsc of the outside end portion **12***a*-**1** in the overlapped part of the end portions of the trunk member **12**. Said part adjacent to the

outside end portion-face of said inside of the sealing tape **20** fixes the outside sealant Se by heat sealing to the inside sealant Se of the inside of the projections **14***b*, **16***b* of the cover members **14** and **16**.

As explained above, the sealed case **10** of the first embodiment of the invention is formed by as follows, for example.

First, as shown in FIGS. **2**A and **2**B, a tongue member **18** is formed in one piece at one end of material **12***a* of a trunk member **12**, and a common sealing tape **20** is fastened to the end-face of the other end and the outside and inside portions adjacent to said end-face. Next, the material **12***a* of the trunk member **12** is wound around the outer circumference of a pattern rod, both end portions are overlapped, and in this overlapped part **12***b*, the inside of the outside end portion **12***a*-**1** is fixed to the outside of the sealing tape **20** fastened to the inside end portion **12***a*-**2**, and if desired, fixed also to the outside of the inside end portion **12***a*-**2**. In this embodiment, in the overlapped **12***b*, the inside sealant Se of the outside end portion **12***a*-**1** is heat sealed to the heat seal strength control film Hsc of the outside of the sealing tape **20** on the inside end portion **12***a*-**2**.

In this time, if desired, the inside sealant Se of the outside end portion **12***a*-**1** can be directly fixed by heat sealing to the outside sealant Se of the inside end portion **12***a*-**2**.

Apart from the above, the first and second cover members **14** and **16** are molded from the above-mentioned same material and constructed to have projections or rims **14***b* and **16***b*, respectively around and outside the main parts **14***a* and **16***a*, respectively.

Before the first cover member is inserted into the opening of one end of the trunk member **12** and fixed thereto, the area around the opening of one end of the trunk member is surrounded by the concave of a split mold (not shown) from the outside of the radial direction of the trunk member **12**. This concave has the same cross section and size as those of the outside of the trunk member **12**, and preferably the inside of the opening of said first end portion is heated by high-temperature air.

Next, the first cover member **14** constructed as explained above is put over an insertion mold (not shown) which is expansible in the radial direction of the trunk member **12**, and it is inserted into the opening of said one end of the trunk member **12** with the main part **14***a* inserted first, and the projection **14***b* around the main part **14***a* is disposed at a desired position on the inner circumference of said one end of the trunk member **12**.

Next, said expansible insertion mold is expanded to push the projection **14***b* of the first cover member **14** onto the inner circumference of the first open end portion of the trunk member **12** which is surrounded and supported from the outside of the radial direction of the trunk member **12** in the concave of said split mold, and fix it thereto. In this embodiment, said insertion mold heats as well as pushing the projection **14***b* of the cover member **14**, and the inside heat seal strength control film Hsc of the projection **14***b* of the first cover member **14** is heat sealed to the sealant Se of the inner circumference of the first open end portion of the trunk member **12** and the heat seal strength control film Hsc of the inside adjacent part of the sealing tape **20** of the inside end portion **12***a*-**2** of the overlapped part **12***b*.

By said pushing force, the projection **14***b* including its corners of the first cover member **14** comes in close contact with all around the inner circumference of the opening of said one open end portion of the trunk member **12**, and it is continuously fixed to said circumference, by heat sealing in this embodiment. This fixing can be made continuously all around or intermittently a part of said circumference.

The fixing strength control film Hsc of the rim **14***b* of the first cover member **14** controls said heat seal strength to a desired level.

It is also possible to use an adhesive instead of heat sealing to make the fixing continuously all around said inner circumference or intermittently a part thereof.

In this way, a desired article is inserted into a case whose one open end portion is closed by the cover member **14**, through the other open end portion. Thereafter, the opening of the second end portion of the trunk main part is closed by the second cover member **16**, in the same way as the first cover member **14**.

In the above-mentioned embodiment and modification, the material and the sealing tape **20** common to the material **12***a* of the trunk member **12** and the first and second cover members **14** and **16** have the hermetic and air tight function in the inorganic material evaporated film or aluminum film constituting the seal film Sf. However, according to the philosophy of the present invention, said sealing process includes hermetic/air tight processing and moisture-proof/air tight processing. Therefore, as a seal film having the sealing function, it is possible to use an airtight film other than the above-mentioned aluminum film and inorganic material evaporated film, or a moisture-proof film made of various materials.

Further, in the above-mentioned embodiment and modification, it is possible to give desired light-shielding property to the laminar material of the trunk member **12** and cover members **14**, **16**. In detail, it is possible to mix a substance having desired light-shielding property with the paper base material of said material and various laminated function films, or to add a light shielding film as a function film. In this case, a light shielding film can be an image forming film for drawing desired color images on the outside of the sealed case **10**. For example, the light shielding effect can be increased by using used paper instead of virgin pulp.

According to the experiments made by the inventors of this application, the light shielding effect is 5–6 abs when virgin pulp is used as a paper base material, 3–4 abs when used paper is used, and 4 abs when virgin pulp is printed black.

A sealed case according to the above-mentioned embodiment can be easily manufactured. It can be manufactured by using a paper base material made of used paper that is less strong than that made of virgin pulp.

As explained above, the fixing of the outside end portion **12***a*-**1** and inside end portion **12***a*-**2** of the trunk member **12** can be made indirectly by gluing the outside of the sealing tape **20** sealing the end of the inside end portion **12***a*-**2** to a part of the outside end portion, as shown in FIG. **5**A. In this case, it is needless to say that in the fixing area or the gluing area, it is preferable that the part corresponding to the tongue member **18** is more close to the tongue member **18** than the other parts, as indicated by a reference numeral **12'***c*. In FIG. **5**A, in the fixing area **12'***c*, only the part corresponding to the tongue member **18** projects toward the tip of the tongue member **18**, but the other parts are generally parallel to the end-face of the inside end portion **12***a*-**2**.

The fixing of the outside end portion **12***a*-**1** and inside end portion **12***a*-**2** of the trunk member **12** can also be made by combination of direct and indirect fixings, as indicated by a reference numeral **12"***c* in FIG. **5**B; direct fixing to the outside of the inside end portion **12***a*-**2** and indirect fixing to the inside end portion **12***a*-**2** by the sealing tape **20** sealing the end-face of the inside end portion **12***a*-**2** and the outside/

inside portions adjacent to said end-face through the portion adjacent to the outside. In this case, also, it is preferable that in the fixing area **12**'*c*, the part corresponding to the tongue member **18** is closer to the tongue member **18** than the other parts. Here, the fixing area **12**'*c* is gradually bending from the part corresponding to the tongue member **18** toward the end-face of the inside end portion **12***a*-**2** as it advances to both sides of the inside end portion **12***a*-**2**.

Description will now be given on a second embodiment of the present invention hereinafter with reference to FIG. **6**A to FIG. **10**C. In these figures, the same reference numerals are given to the substantially same members, and detailed explanation will be omitted.

In the second embodiment, a photograph film cartridge is used as an article to be housed in a case. It is needless to say that this embodiment can be easily applied to other articles.

A photograph film case **10** has a rectangular trunk with a square cross section and round corners. To realize the re-close ability, the case has a tongue member **18** in its material or a blank **12***a*, and the tip **18***c* of the tongue member **18** can be inserted into a cut or a slit **50** provided in a cylindrical trunk member or a trunk **12**, after the case is unsealed. As shown in FIGS. **6**A and **6**B, the photograph film case **10** comprises the cylindrical trunk member **12** made of material **12***a*, a first cover member **14** and a second cover member **16** to seal the openings at both end portions of the cylindrical member **12**. A 135-type film cartridge **100** is contained in the case as one embodiment.

The sheet material **12***a* is longer than the outer circumference of the trunk member **12**, making an overlapped part **12***b* by overlaying and gluing to the outside of the trunk member **12** in the width direction from the first cover member **14** to the second cover member **16**. The tip of the material **12***a*, or the tip of the outside end portion forms a tongue-like member **18**. While the case is sealed, the overlapped part of the sheet **12***a* is glued by appropriate strength, and the case **10** can be held moisture-proof. Namely, the gluing strength of the overlapped part is the degree not to be peeled off during transportation, displaying or user's handling. However, when the tongue-like or pick-up member **18** is pulled by the force of averaged persons when using the product such as a photograph film contained in the case, the gluing of the overlapped part is released and the case can be unsealed.

In a part of the sheet **12***a* covered by the member **18**, a slit **50** is provided for insertion of the tip **18***c* of the tongue-like member. By inserting the tip **18***c* of the released edge member **18** into the case through the slit **50**, the shape of the cylindrical trunk member **12** can be reproduced, that is, the case can be re-closed.

The width of the slit **50** is selectable, but the tip **18***c* of the edge member is preferably 35–70% of the width of the material, especially 50–60% is preferable.

As shown in FIG. **7**A, a moisture-proof film **52** is provided in the trunk member **12** so as to cover the slit **50**. The moisture-proof film **52** is provided in the width from the first cover member or a seal cover **14** up to the second cover member or a seal cover **16**, covering the area around the slit **50** from the inside of the trunk member **12**, and preventing ingress of gas or moisture from the slit **50**. The moisture-proof film **52** wraps the inner end of the material **12***a*, reaching up to the overlapped part **12***b* provided outside of the trunk member **12**. Protection of the internal end of the trunk member **12** by the moisture-proof film, so-called "edge-protect" is important, preventing ingress of gas or moisture into the case through the cut end-face of the material **12***a*, and ensuring the moisture resistivity of the case **10**. The moisture-proof film **52** is fixed by heat sealing or the like to the inside surface of the trunk member **12** appropriately distant from the slit **50**, just like surround the slit, so that the inside of the slit **50** is made like a bag to permit insertion of the tip **18***c* of the edge member.

As shown in FIG. **7**B, a photograph film cartridge **100** contained in the case can be fixed in being held by the first cover member **14** and the second cover member **16**. When the second cover member **16** is closed with the four sides of the trunk member **12** being pressed inward compared to the natural state, after a sealed case **10** is completed, the cover members **14** and **16** are pushed inward by the returning force of the cylindrical trunk member **12**, and the photograph film cartridge **100** is fixed within the case **10** by the cover members **14** and **16** of this state.

A case **10** according to the second embodiment is manufactured by molding a trunk member **12** and fitting a first cover member **14**, then loading an article **100** such as a 135 type film cartridge in the cylindrical trunk, and finally fitting a second cover member **16**. During fitting the second cover member **16**, as stated above, the article **100** can be fixed to the inside of the trunk member **12** in being held by the elastic force of the first and second cover members **14** and **16**.

The case **10** can be unsealed by pinching the tab **18** provided integral with the outside end portion of the sheet and pulling it up, as shown in FIG. **8**A. Namely, the gluing between both parts of the sheet material **12***a* can be released by the pulling action, and then the gluing between the trunk part and the first and second cover members **14**, **16** can be peeled off to the state where one side of the rectangular trunk **12** is completely released. By this unsealing action, the product or the article, the 135-type photograph film cartridge **100** in this embodiment can be easily taken out.

After the photographing, re-load the photograph film cartridge **100** into the unsealed photograph film case, and as indicated by an arrow in FIG. **9**A, turn the edge member in the trunk member direction, and insert the tip **18***c* of the tab **18** into the slit **50**, whereby the trunk member can be restored to its original form as shown in FIGS. **8**B and **9**B. Since the tip of the tab **18** inserted into the case through the slit **50** is fixed in being held by the sheet **12***a* and the moisture-proof film **52**, the trunk will be held in this state.

Next, an example of a method of manufacturing the case **10** with the above-mentioned structure will be explained.

It is preferable to use a laminate with a metal film or an inorganic oxide evaporated layer as a sheet or blank material **12***a* used for manufacturing the case of the present invention. Cut a slit **50** in the blank **12***a*, and stick a moisture-proof film **52** on the blank, before making the case. The slit **50** may be a simple cut, or an opening with a certain width. Heat seal the moisture-proof film **52** to the sheet **12***a* up to its outside, so that the slit **50** can be covered from the inside and the cut end of the sheet **12***a* can be covered. In this case, it is sufficient to stick only both sides of the moisture-proof film **52** to the inside of the sheet **12***a* in parallel to the elongate direction of the slit from the first cover member **14** to the second cover member **16**. By sealing the first and second cover members **14** and **16**, the slit is sealed vertically to said elongate direction.

Make the cylindrical trunk member **12** by using the blank **12***a*. The moisture-proof film **52** has been heat sealed to the outside of the sheet **12***a*, covering the cut end of the sheet **12***a* parallel to the slit **50**. Glue weakly the moisture-proof film **52** and the inside of the sheet **12***a*. For this purpose, it is preferable to provide a sealant layer as one of the inside outermost layer of the laminate sheet **12***a* or the outermost layer of the moisture-proof film **52**.

The cross section of the trunk member **12** is optional, but preferably polygonal with round corners. Particularly, square, pentagon or hexagon is preferable. A square with round corners is most preferable.

Next, fit the first cover member **14** to the first end portion of the trunk member **12** to close an opening portion. Although there are various methods of sealing, it is preferable to fit the cover member **14** shaped to fit the inside of the trunk member **12** onto one end of the trunk member, and heat seal the outer circumference of the rim projection **14***b* of the cover member and the inner circumference of the end of the cylindrical trunk member **12**. After loading the article **100** into the trunk member **12**, close the second end portion of the trunk member **12** by the second cover member **16** in the similar manner, thereby completing the sealed case **10**.

FIGS. **10**A to **10**C are the sectional views showing lamination examples of substance usable as a re-containable case according to the present invention. FIG. **10**A shows the lamination of the material. FIG. **10**B shows the lamination of the cover member. FIG. **10**C shows the lamination of the moisture-proof film.

First, the material will be explained with reference to FIG. **10**A.

The sheet material is a gas-barrier lamination including a paper layer or a paper base material **21**. There is a print layer **22** with design printed thereon on (outside) the paper layer **21**. A thermoplastic resin layer **23** of polyolefin group such as polyethylene (PE) may be provided outermost as a heat seal layer. Laminated downwardly from the paper layer **21** are a thermoplastic resin layer **25** of polyolefin group such as a PE layer, a gas-barrier evaporated layer **27** and a sealant or heat seal layer **29**.

As a gas-barrier evaporated layer or a hermetic film **27**, a metal or inorganic oxide evaporated layer can be used, as long as resistant to gas such as oxygen and vapor. As a metal to be evaporated, there are aluminum and magnesium, for example. As inorganic oxide to be evaporated, there are silicon oxide, magnesium oxide, aluminum oxide, for example. The gas-barrier evaporated layer **27** of the embodiment is not to be limited by the metal or inorganic oxide evaporated layer. Any material having the above-mentioned bas-barrier function can be used.

For these inorganic oxide evaporated films, refer to the Thin Film Handbook, page 879–901 (the Japan Society for the Promotion of Science), the Vacuum Engineering Handbook, page 502–509, page 612, page 810 (Nikkan Kogyo Shinbun—The Japan Daily Industrial Newspapers), and the Vacuum Handbook—Revised edition, page 132–134 (ULVAC Japan Vacuum Engineering K.K.).

As a specific example, there are Cr_2O_3, Si_xO_y (x=1, y=1.5–2.0), Ta_2O_3, ZrN, SiC, TiC, PSG, Si_3N_4, single crystal Si, amorphous Si, W, AlI_2O_3.

The thickness of said gas-barrier evaporated layer **27** depends on the type and configuration of the metal or inorganic oxide to be used, and generally, 15–300 nm is preferable. A specific value is selectable. However, if the film thickness is less than 30 nm, a film may be formed not all the surface of the base material **21** or the formed film thickness may be insufficient, and the film may not function as a gas-barrier layer. Contrarily, if the film thickness is over 300 nm, it becomes difficult to give flexibility to the film, and a crack may occur in the film due to bending, tensile force or other external factors. The preferable evaporated film thickness is 20–150 nm.

There are various methods of forming the evaporated layer **27** consisting of metal or inorganic oxide on the sealant layer or heat seal layer **29**, but an ordinary vacuum evaporation is representative. The other thin film forming methods, such as a spattering method and an ion plating method can also be used. At present, the vacuum evaporation method has the highest productivity. In the vacuum evaporation system used for vacuum evaporation, an electron beam heating method or a resistance heating method is preferable as a heating means. It is possible to use a plasma assisted method or an ion beam assisted method in order to enhance the adhesion between an evaporated film and a base material or the density of a formed thin film.

The sealant **29** is formed by a material which can be easily peeled off and unsealed. Namely, while the case is unsealed, the sealant **29** is heat sealed to the moisture-proof film and seals up the overlapped part **12***b*. However, when the case is unsealed, since the gluing force of the overlapped part **12***b* is appropriately weak, the fixing of the overlapped part **12***b* can be released.

The sealant **29** can be manufactured by using a thermoplastic film such as PE. If necessary, it is permitted to provide an anchor coat layer as described in Jpn. Pat. Appl. KOKAI Publication No. 2000-6304, or a primer layer consisting of a resin having the shearing elastic modulus of $(0.01-1)\times10^9(N/m^2)$ as described in Jpn. Pat. Appl. KOKAI Publication No. 2001-145973.

The polyolefin group thermoplastic resin layer **25** functions as an adhesive layer when sticking the gas-barrier evaporated layer **27** and paper layer **21** by melting said resin like a curtain upon extruded laminate. Considering the workability at a low temperature by reducing the shrinkage at lamination, MFR is preferably at least 3 (g/10 min). If MFR is lower than 3 (g/10 min), the low-temperature workability is inferior, and as shrinkage at lamination increases, a crack may occur in the evaporated film affecting the gas-barrier property. It is preferable that MFR is in a range of 5–14 (g/10 min).

As a polyolefin group thermoplastic resin layer **25**, polyethylene, polypropylene, ethylene-acetic acid vinyl copolymer or ionomer can be used. Judging from the aptitude to the extrusion work, polyethylene is most preferable.

When melting and extruding said polyolefin group thermoplastic resin like a curtain or a thin film, the temperature is preferably as low as not deteriorating the gas-barrier property of the gas-barrier evaporated layer **27**. The optimum condition is different depending on the type of resin to be used and the extrusion thickness. The temperature is preferably 320° C. or lower for polyethylene, more particularly, 300° C. or lower. If the temperature exceeds 320° C., the evaporated film will be damaged by the heat and the gas-barrier property may be deteriorated. If the temperature is 250° C. or lower, an extrusion defect may occur. The preferable melting/extruding temperature is 250–320° C.

When the extrusion temperature becomes 260° C. or lower, natural oxidation upon free drop from T-die becomes insufficient, and the adhesion between the sealant base material and paper may become weak. Thus, forced oxidation is preferable to compensate for this insufficient oxidation. As an extrusion laminate in such a case, it is preferable to use also surface treatment such as ozone processing or corona processing, at the same time.

As ozone processing, spray at least one side of the molten resin an appropriate amount of ozone neither lowering excessively the resin temperature nor vibrating. A known method of generating ozone is no problem. For example, ozone can be easily generated by air discharging within an airtight vessel, and ozone can be quantitatively transported by a carrier gas.

The thickness of the polyolefin group thermoplastic resin **25** depends on the resin composition, extrusion temperature and other conditions. For example, when extrusion molding polyethylene at a temperature lower than 300° C., the thickness of 10–20 μm is preferable. If the thickness exceeds 20 μm, a stress increases when the resin is cooled and hardened, and the distortion is transmitted to the evaporated film, causing cracks. When the thickness is less than 10 μm, there may be a problem in extrusion. The preferable resin thickness is 15–20 μm.

The paper layer **21** has a function of giving strength to a case. It is used also as a print base material to print letters, pictures or drawings. The kind of paper is selectable depending on the function and printing contents of an object packing material. For example, fine quality paper, kraft paper or coated paper can be used. The paper thickness is also selectable depending on the purpose of application.

The heat seal layer **23**, which may be provided as an outermost layer, is used as an adhesive film when making the overlapped part **12***b* of the trunk member **12**. As a heat seal layer **23**, resins such as polyethylene, polypropylene, ethylene-acetic acid vinyl copolymer, ethylene-methacrylic acid copolymer, ethylene-methacrylic acid ester copolymer, ethylene-acryl acid copolymer, ethylene-acryl acid ester copolymer and their metal bridges can be used. The thickness of the layer **23** is determined depending on the purpose, and generally 15–200 μm. As a heat seal layer laminating method, there are several known methods such as a dry lamination by piling the films of said resigns, an insolvent lamination, extrusion lamination by melting said resigns and an extruding like a curtain, for example.

Next, the materials of the cover members **14** and **16** will be explained by referring to FIG. **10**B.

The cover member is also a gas-barrier laminate containing a paper layer **21**. A print layer **22** is provided on the outside of the paper layer **21**. On the inside of the paper layer **21**, a polyolefin group thermoplastic resin layer **25** is laminated on the gas-barrier evaporated layer **27** which is piled on a plastic base material **26**.

The plastic base material **26** is made of high-polymer plastic material and used as a base of evaporation. The base material is made of, for example, a polyester film such as a polyethylene terephtalate (PET) and polyethylene naphthalate film, a polyolefin film such as a polyethylene and polypropylene film, a polystyrene film, a polyamide film, a polyvinyl chloride film, a polycarbonate film, a polyacrylonitrile film, a polyamide film. Either drawn or non-drawn films can be used. The material having mechanical strength and dimensional stability is recommendable.

The high-polymer plastic material is processed to be films and used as a plastic base material **26**. Particularly, polyethylene terephtalate drawn optionally in two axes is preferable. It is permitted to coat the plastic base material **26** by known additive or stabilizer such as antistatic agent, anti-ultraviolet rays agent, plasticizer and lubricant. To improve adhesion to an evaporated film, it is permitted as pre-processing to treat the plastic material surface by corona processing, low-temperature plasma processing or ion bombardment. In addition, chemical processing or solvent processing is allowable.

The thickness of the plastic base sheet **26** is not particularly limited. Considering the aptitude as packing material, the characteristic to laminate other layers thereon, and the workability when forming a gas-barrier evaporated layer **27**, the thickness of 3–200 μm is practical, and 6–30 μm is preferable.

Further, considering the mass-productivity, it is preferable to make the plastic base sheet **26** long lengths to enable forming thin films continuously.

Concerning the gas-barrier evaporated layer **27** and polyolefin group thermoplastic resin layer **25**, the explanation is the same as those for the laminates for said material.

Next, the moisture-proof film material will be explained by referring to FIG. **10**C. In the moisture-proof film, a polyolefin thermoplastic layer **23** is formed as a heat seal layer on the surface of a plastic base material **26**, a gas-barrier evaporated layer **27** is formed on the underside of the plastic base material **26**, and a heat seal layer or a sealant layer **28** is formed underside of the layer **27**.

As already explained, in the case of the embodiment, the easy-to-unseal overlapped part **12***b* is formed by a sealant layer and a heat seal layer. The heat seal layer can be provided in any of (1) the outermost layer of the material, (2) the outermost layer of the moisture-proof film **52** made by heat sealing the material and (3) the innermost layer of the material. When using the case of the present invention as a moisture-proof case for photographing light-sensitive material, it is preferable to set the moisture permeability of the material, the first and second cover members and moisture-proof film to 1.0 g/m^2·24 h (40° C.·90% RH) or less. This moisture permeability is measured by the method defined by JIS•Z0208.

An article to be contained in the sealed case of the present invention is not particularly limited. However, since the sealed case of the invention can be used as an excellent moisture-proof gas-barrier case, it is suitable for a package of detergent disliking vapor, photograph film, foods and medicines to be kept away from vapor or oxygen, and the like. To completely eliminate the influence of oxygen and vapor during storing, it is permitted to put a dehydrator or a deoxygenerator in the case together with the product to be packed.

Further, the case of the second embodiment of the present invention is re-containable, and it is suitable for storing a product after unsealing the case or sending back a product for post-processing. A photograph film is an example of such products. The case is suitable for containing a 135-type film cartridge, Brownie film, APS film and other roll type films.

Since the case of the embodiment is a single package made mainly of paper, it causes no problem when burning up and decreases environmental load. If the case is made to have the square cross section, it is convenient for displaying or storing.

Further, since the re-containable case is composed of gas-barrier and vapor-barrier laminates, it is resistant to oxygen and vapor. Further, the case is easy to unseal, and re-contains a product at need. The case can be disposed by incineration.

It becomes apparent from the above description that the sealed case according to the embodiment of the present invention is more hermetic than the conventional cases, but it can be manufactured at lower costs.

Moreover, the case of the invention realizes the hermeticity satisfying the airtightness and moisture-proofness to meet the gas-barrier requirement to the gas including oxygen. It is suitable for packing detergent and photograph film disliking vapor or foods and medicines to be kept away from vapor and oxygen.

Description will now be given on an example of a method of molding the cover member used in the case of the abovementioned embodiment hereinafter with reference to FIG. **11**A to FIG. **14**B.

The fist and second cover members are substantially the same except that its projection or rim is provided on the main part in the reverse direction. Thus, only a method of molding the first cover member will be explained.

As shown in FIGS. **11**A and **11**B, the cover member **14** comprises a flat part of predetermined shape or a main part **14***a* and a peripheral bent portion or a rim **14***b* bent at the periphery of the flat part **14***a*. The predetermined shape of the flat part **14***a* is a kind of polygon, or square with staged portions. This square cover member has staged corners **14***c*. Each corner **14***c* is formed by a small-radius curved surface to prevent breakage by the stress concentrated when the cover member **14** is formed. (In the first embodiment, the corners of the cover member are shown as right-angles, but preferably they are formed by curved surfaces as in the second embodiment cover member.)

First, description will be given on a female mold **114** and a sheet material holder **116** to be used together with the female mold which are members of a cover member molding machine with reference to FIGS. **12**A and **12**B. FIG. **12**A is a schematic plane view of a female mold **114** and a sheet material holder **116**. FIG. **12**B is a schematic sectional view taken along the line **12**B—**12**B of the female mold **114** and sheet material holder **116** of FIG. **12**A.

The female mold **114** has a flat surface **114***a* to place a sheet material (not shown) for the cover member **14**. On the material placing surface **114***a*, an opening **114***c* is provided having an inner circumference **114***b* corresponding to the predetermined form of the flat part **14***a* of the cover member **14**. Specifically, the shape and size of the inner circumference **114***b* are substantially the same as those of the side of the flat part **14***a* of the cover member **14** shown in FIGS. **11**A and **11**B where the peripheral bent portion **14***b* is not bent (i.e., the inside surface). An entrance edge **114***d* of the opening **114***c* of the material placing surface **114***a* is chamfered. The chamfered shape of the entrance edge **114***d* is a convex curve.

The female mold **114** is fixed, by fixing screws (not shown) inserted into fixing screw insertion holes **114***e*, at a predetermined position (not shown) of a workshop (not shown) where the cover member molding machine is installed.

The sheet material holder **116** has an opening which has a circumferential edge **116***a* larger than the entrance edge **114***d* of the opening **114***c* of the material placing surface **114***a* of the female mold **114**.

The sheet material holder **116** is movable between the predetermined release position isolated from the flat plate **114***a* of the female mold **114** as shown in FIG. **12**B, and the position where a sheet material (not shown) for the cover member **14** of FIGS. **11**A, **11**B is placed on the material placing surface **114***a* of the female mold **114**, the opening of the sheet material holder is fit to the entrance edge **114***d* of the opening **114***c* of the material placing surface **114***a* of the female mold **114**, the sheet material holder is pressed to the sheet material placed on the material placing surface **114***a* of the female mold **114**, and the sheet material is pressed onto the material placing surface **114***a*.

Next, description will be given on the structure of a male mold **118** which is another member of said cover member molding machine and is used in combination with the female mold **114** and the sheet material holder **116**, with reference to FIGS. **13**A to **13**D. FIG. **13**A is a schematic plane view of a male mold **118** which is another member of the cover member molding machine. FIG. **13**B is a schematic side view of the male mold **118** of FIG. **13**A. FIG. **13**C is a schematic magnified plane view of the part encircled by the alternate long and two short dashes line indicated by a reference character C in the male mold **118** of FIG. **13**A. FIG. **13**D is a schematic magnified side view of the magnified part of FIG. **13**C viewed from the arrow D direction.

The male mold **118** has an outer circumference **118***a* of predetermined shape corresponding to said predetermined shape of the flat part **14***a* of the cover member **14**, and a contact surface **118***b* which makes contact with the sheet material (not shown) being placed on the flat part of the female mold **114** shown in FIG. **12**A and being pressed by the sheet material holder **116** onto the material placing surface **114***a*. More specifically, the predetermined shape and size of the outer circumference **118***a* are substantially the same as those of the side of the flat part **14***a* of the cover member **14** shown in FIGS. **11**A, **11**B where the peripheral bent portion or rim **14***b* is bent (i.e., the outside surface).

A boundary edge **118***c* between the outer circumference **118***a* and the contact surface **118***b* is chamfered. The chamfered shape of the boundary edge **118***c* is a convex curve.

At least staged portion (corner) **118***d* of the outer circumference **118***a* is inclined inward along the contact surface **118***b* by an angle of α, as it goes away from the contact surface **118***b* further from the position P which is separated from the contact surface **118***b* by the distance shorter than BL, the bent length of the peripheral bent portion **14***b*. At least staged portion (corner) **118***d* of the outer circumference **118***a* is, in the part from the contact surface **118***b* to the position P, formed by a substantially straight line orthogonal to the contact surface **118***b*.

At the center of the surface of the male mold **118**, a connection hole **118***e* is formed. Connected to the connection hole **118***e* is the end portion (shown by a reference **122** in FIGS. **14**A and **14**B) of a reciprocating member of a known reciprocating unit which supports the male mold **118** corresponding to the opening **115***c* of the material placing surface **114***a* of the female mold **114** fixed to a predetermined position (not shown) in said workshop (not shown). The unit reciprocates the male mold between the isolated position where the male mold **118** is located upward the opening **114***c* of the material placing surface **114***a* of the female mold **114** and the position where the male mold **118** is inserted a predetermined depth into the opening **114***c*.

Description will now be given on a process of molding the cover member **14** shown in FIGS. **11**A and **11**B, from the sheet material by the cover member molding machine which is constructed by a combination of said female mold **114**, sheet material holder **116** and male mold **118**, with reference to FIGS. **14**A and **14**B.

Here, FIG. **14**A a schematic longitudinal sectional view showing the process immediately before molding a cover member **14** from the sheet material using the cover member molding machine. FIG. **14**B is a schematic longitudinal sectional view showing the process immediately after molding the cover member **14** from the sheet material using the cover member molding machine.

A sheet material **120** which is molded by the cover member molding machine to be a cover member **14** shown in FIGS. **11**A and **11**B, is prepared independently of the molding process in said cover member molding machine. The piece **120** has a predetermined outer shape corresponding to said predetermined circumferential shape of the opening **114***c* of the material placing flat part **114***c* (i.e., square with round corners). The size of said predetermined shape of the opening **114***c* is previously set larger than the size of said shape of the opening edge **116***a* of the sheet material holder **116**.

In said cover member molding machine, the male mold **118** is upwardly isolated from the opening **114***c* of the material placing surface **114***a* of the female mold **114** fixed at said predetermined position not shown in the drawing in the workshop (not shown) as described above, and the sheet piece **120** is placed on the material placing surface **114***a* while the sheet material holder **116** is being isolated from the material placing surface **114***a* of the female mold **114**.

In this time, the piece **120** is concentrically located with respect to the opening **114***c* of the material placing surface **114***a*, corresponding to said predetermined shape of the opening **114***c* (i.e., corresponding the four corners which are staged portions of said predetermined shape of the piece **120**, to the four corners which are the staged portions of said predetermined shape of the opening **114***c*).

Next, press the piece **120** of the sheet material placed on the material placing surface **114***a* of the female mold **114** as mentioned above, to the sheet material holder **116**, as shown in FIG. **14**A. In this time, the sheet material holder **116** is aligned with the opening **114***c* of the material placing surface **114***a*, corresponding to said predetermined shape of the opening **114***c* (i.e., corresponding the four corners which are staged portions of said predetermined shape of the edge **116***a* of the opening of the sheet material holder **116**, to the four corners which are the staged portions of said predetermined shape of the opening **114***c*). This state is shown in FIG. **14**A.

In FIG. **14**A a reference numeral **122** shows the end portion of the reciprocating member of the known reciprocating unit (not shown) which reciprocates vertically the male mold **118** between the isolated position shown in FIG. **14**A and the position where the male mold **118** is inserted a predetermined depth into the opening **114***c* of the material placing surface **114***a* of the female mold **114** as described above.

Next, the male mold **118** makes contact and presses, by said reciprocating unit, the contact surface **118***b* to the small sheet **120** placed on the material placing surface **114***a* of the female mold **114** through the opening of the sheet material holder **116**. In this time, the male mold **118** is concentrically located with respect to the opening **114***c* of the material placing surface **114***a*, corresponding to said predetermined shape of the opening **114***c* (i.e., corresponding the four corners which are staged portions of said predetermined shape of the contact surface **118***b* of the male mold **118**, to the four corners which are the staged portions of said predetermined shape of the opening **114***c*).

When the male mold **118** is further pressed by said reciprocating unit, the male mold **118** pushes the sheet **120** being contacted with the contact surface **118***b* into the opening **114***c* of the flat part **114***c* through the entrance edge **114***d*.

Then, the part of the rectangular sheet **120** contacting with the contact surface **118***a* of the male mold **118** is made to be a flat part **14***a* having said predetermined shape of the cover member **14**. The part of the sheet material **120** extruded from the contact surface **118***a* of the male mold **118** is pulled into the opening **114***c* of the female mold **114** in the entrance edge **114***d* of the opening **114***c* of the material placing surface **114***a* of the female mold **14**, that is, in the periphery of the flat part **14***a*. This pulled-in part is held between inner circumference **114***b* of the opening **114***c* and the outer circumference **118***a* of the male mold **118** in the opening **114***c*, and carried in this state from the periphery of the flat part **14***a* toward a predetermined direction crossing the surface of the flat plate **14***a*, i.e., toward the entrance edge **114***d* of the opening **114***c*, along the inner circumference **114***b* of the opening **114***c*, and bent to be a bent peripheral bent portion **14***b*.

This state is shown in FIG. **14**B, in which the cover member **14** shown in FIGS. **11** and **11**B is molded.

As described above, while the piece **120** of the sheet material placed on the material placing surface **114***a* of the female mold **114** is being pushed into the opening **114***c* of the material placing surface **114***a* of the female mold **114** by the male mold **118**, a tensile force is generated between the part of the sheet **120** pushed into the opening **114***c* of the material placing surface **114***a* of the female mold **14** by the male mold **118**, and the part pressed by the sheet holder **116** onto the material placing surface **114***a* of the female mold **114**.

Since the entrance edge **114***d* of the opening **114***c* of the material placing surface **114***a* is chamfered as well as the boundary edge **118***c* between the outer circumference **118***b* and contact surface **118***a* of the male mold **118** is chamfered, said tensile force is spread almost uniformly all over the part extruded from the contact surface **118***a* of the male mold **118** in the sheet **120**. Thus, a wrinkle is not generated along the boundary between the surface of the side of the flat part **14***a* where the rim portion **14***b* is bent (i.e., outside surface) and the surface of the bent rim **14***b* facing the flat part **14***a*, even if the predetermined shape of the flat plate **14***a* of the cover member **14** has a square staged portion, for example. Further, even if the cover member **14** is a laminate, the above-mentioned wrinkle is not generated, a tear in the surface layer which may mix into said wrinkle does not occur, and a void is not generated in the laminated layers.

At least the staged portion (the corner in this example) **118***d* of the outer circumference **118***b* of the male mold **118** is a substantially straight line orthogonal to the contact surface **118***b* except the boundary edge **118***c* chamfered up to the position P which is separated from the contact surface **118***b* by the distance shorter than BL that is the bent length of the peripheral bent portion **14***b* of the cover member **14**, and it is inclined inward along the contact surface **118***b* by an angle of α as it goes away from the contact surface **118***b* further from said position P. This prevents concentration of said tensile force on the position corresponding to said staged portion of the sheet **120** extruded from the contact surface **118***a* of the male mold **118**. Thus, a wrinkle may be not generated at the position corresponding to said staged portion **118***d*. Further, even if the cover member **14** is a laminate, the above-mentioned wrinkle is not generated, a tear in the surface layer which may mix into said wrinkle does not occur, and a void is not generated in the laminated layers.

As described above, after being molded from the sheet **120**, the end of the bent rim **14***b* quits from the opening **114***c* of the female mold **114** when the male mold **118** reaches the predetermined depth in the opening **114***c* of the material placing surface **114***a* of the female mold **114**, and thereafter the cover member **14** is inserted into end of the cylindrical trunk member of the case through the opening, and fed to the process for closing this opening.

In the above-mentioned example, at least the staged portion (the corner in the above-mentioned example) **118***d* of the outer circumference **118***a* of the male mold **118** is a substantially straight line orthogonal to the contact surface **118***b* except the boundary edge **118***c* chamfered up to the position P which is separated from the contact surface **118***b* by the distance shorter than BL that is the bent length of the bent rim **14***b* of the cover member **14**, and it is inclined

inward along the contact surface **118***b* by an angle of a as it goes away from the contact surface **118***b* further from said position P.

Although being structured to be a substantially straight line orthogonal to the contact surface **118***b* all over the outer circumference **118***a* except the boundary edge **118***c* chamfered up to the position P which is separated from the contact surface **118***b* by the distance shorter than BL that is the bent length of the rim **14***b* of the cover member **14**, and to be inclined inward along the contact surface **118***b* by an angle of a as it goes away from the contact surface **118***b* further from said position P, the same effect as that of the above-mentioned embodiment male mold **118** can be obtained.

Also, in the above-mentioned example, the predetermined shape of the flat part **14***a* of the cover member **14** and the shape of the outer circumference **118***a* of the male mold **118** corresponding to said shape is substantially square with the staged corner **14***c*, according to the philosophy of the present invention, the shape can be circular, elliptical, polygonal other than square or indefinite, but they should include a staged portion to become a convex or a concave.

Said cover member molding machine is a machine to mold from a sheet material a cover member which comprises a predetermined shape flat part and an outwardly extended rim bending from said flat part periphery to a predetermined direction crossing said flat part surface, closes the opening of the end of the main part of a cylindrical case when being inserted into the opening of said end, and is to be supported by the inner circumference of the end portion in said peripheral bent portion. However, even if said predetermined shape of said flat plate of said cover member has a square staged portion, for example, a wrinkle is not generated along the boundary between the surface of the side of said flat part where said rim is bent and the surface of said bent rim facing said flat part, or at the position of said bent rim corresponding to said staged portion of said flat part. Further, even if the cover member **14** is a laminate, the above-mentioned wrinkle is not generated, a tear in the surface layer which may mix into said wrinkle does not occur, and a void is not generated in the laminated layers.

Now, description will be given on an example of a method of fixing a cover member molded as explained above to a trunk member with reference to FIGS. **15**A to **15**H.

Here, a trunk member is the same as the above-mentioned trunk member **14** except that a sealing tape **20** is omitted. For simplified explanation, an opening to be closed by a cover member is denoted by a reference numeral **12***h*, and an end portion having this opening is denoted by a reference numeral **12***i*, as shown in FIG. **15**A.

First, as shown in FIG. **15**B, insert a known heating means **214** into one end portion **12***i* of a cylindrical trunk member **12** through an opening **12***h*, and heat a sealant or a heat-sensitive adhesive function part provided inside of the one end. This heating should be made to activate said heat-sensitive adhesive function part. The known heating means **214** mentioned here comprises a high-temperature air ejector. The air is heated to 70° C. to 80° C.

When an article is already loaded in the inner space of the cylindrical trunk member **12** and heating of this article is not preferable, the heating process can be omitted.

Next, insert the cover member **14** with a flat part **14***a* first into the end portion **12***i* through the opening **12***h* of the cylindrical trunk member **12**, so that the flat part **14***a* closes the opening **12***h* and the outer circumference of the bent rim **14***b* comes in contact with the inner circumference of the end portion **12***i*, as shown in FIG. **15**C.

Next, insert the heated inside heating mold member **216** into the cover member **14**, as shown in FIG. **15**D. The shape of this inside heating mold member **216** is the same as the opening **12***h*, but the dimensions are a little smaller. Namely, the inside heating mold member **216** is set so that its outer circumference comes in contact with almost whole inner circumference of the rim **14***b* of the cover member **14**. This heating member is heated by a known heating means up to a temperature necessary to activate the heat-sensitive adhesive function part.

Next, push the end portion **12***i* of the trunk member from the outside by two kinds of outside mold members, i.e., outside mold member intermediate parts **218***a* and outside mold member corner parts **218***b*, so that these parts **218***a*. **218***b* and the inside heating mold member **216** fix the adhesive part of the rim **14***b* of the cover member **14** to the heat-sensitive adhesive function part of the end portion **12***i* of the trunk member **12** by gluing and sealing, as shown in FIGS. **15**D, **15**E, **15**F and **15**G.

Said outside mold member intermediate parts **218***a* respectively correspond to a plurality of sides forming the outer circumference of the end portion of the trunk member, as shown in FIG. **15**E. Said outside mold member intermediate parts **218***b* respectively corresponds to the corners between the sides, as shown in FIG. **15**G. In the above-mentioned embodiment case, the trunk member is rectangular, and there are four intermediate parts **218***a* corresponding to the four sides of the case, and there are four corners **218***b* corresponding to the four corners.

Said outside mold member intermediate part **218***a* and outside mold member intermediate part **218***b* are set so that they are operated independently of each other. The four intermediate parts **218***a* press the sides of the end portion **12***i* to the heating member **216** as indicated by the arrow X. As a result, each intermediate part **218***a* cooperates with the inside heating mold member **216**, holds the side wall of the cylindrical end portion **12***i* and the side wall of the rim **14***b* of the cover member **14**, and melts them by heating and secures them by sealing them. Thereafter, the intermediate part **218** is moved in the direction reverse to the arrow direction, and instead each corner part **218***b* is moved in the arrow Y direction to press the corner of the end portion **12***i*. As a result, each corner part **218***b* cooperates with the inside heating mold member **216**, holds the corner wall of the end portion **12***i* and the corner wall of the rim **14***b* of the cover member **14**, and secures them by sealing them by heating the inside heating mold member **216**.

If the heat-sensitive adhesive function part is not sufficiently activated by heating the inside heating mold member **216**, the outside mold member intermediate part **218***a* and the outside mold member corner part **218***b* can be heated by a known heating means up to a temperature to activate the heat-sensitive adhesive function part.

Next, move said outside mold member corner part **218***b* in the direction reverse to the arrow, to separate it from the trunk member, and insert the inside mold cooling member **220** into the cover member **14**, as shown in FIGS. **15**H and **15**I. It is preferable that at least the part of the inside mold cooling member **220** to be inserted into the cover member has substantially the same shape and dimensions as those of said inside heating mold member **216**.

Further, press almost all over the outside of end portion **12***i* of the trunk member **12** by the outside mold cooling members **222** as indicated by the arrow Z, hold the end portion **12***i* of the trunk member and the rim **14***b* of the cover member by the outside mold cooling member **222** and the

inside mold cooling member **220**, take them out, stabilize said sealing quickly, and increase the strength of said sealing.

The outside mold cooling member **222** presses the end portion **12***i* in the direction diagonal to the opening **12***h* as indicated by the arrow Z, to complete the sealing of said adhesive part of the rim **12***b* of the cover member **14** with respect to said heat-sensitive adhesive function parts of the four corners of the end portion **12***i*.

When the cross section of the opening **12***h* is polygonal except square, the outside mold cooling member **222** preferably presses each corner of the polygon inwardly into the opening **12***h*. This will ensure the sealing of said adhesive part of the rim **14***b* of the cover member **14** with respect to said heat-sensitive adhesive function part of each corner of the polygon except square of the area **12***i* in the proximity of the opening of the inner circumference of the trunk member **12**.

The thermal capacity of said outside mold cooling member **222** and the inside mold cooling member **220** is preferably large. They can be positively cooled by various known cooling means. If the purpose of stabilizing rapidly said sealing and increasing its strength is attainable, the cooling members may be held non-heated or may not be positively cooled by a known cooling means.

If the strength of said sealing can be set to a desired level, the cooling of said sealing (i.e., the process of stabilizing the sealing) by the cooling members **222**, **220** shown in FIGS. **15**H and **15**I can be omitted.

After, close the opening of the first end portion of the trunk member by the first cover member **14**, as described above, reverse the trunk member so that the second end portion is faced up, put a product in the trunk member as stated before, and close the opening of the second end portion of the trunk member by the second cover member, by the same process as for the first cover member, thereby completing a sealed case.

Though not have been explained heretofore, it will be apparent to those skilled in the art that said cover molding process and cover fitting process could be performed continuously and mass-productively.

From the above description, it will be apparent to those skilled in the art that the invention disclosed herein provides a sealed case with excellent rigidity even by using relatively thin material or a blank.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details and representative embodiments shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

What is claimed is:

1. A sealed case, comprising:

an elongated trunk member including an overlapped part made by overlapping at least parts of an inside end portion and an outside end portion apart from each other in a vertical axis direction of a sheet material having a vertical axis and a horizontal axis crossing the vertical axis, and first and second open portions each provided with an opening and apart from each other in a horizontal axis direction, and said overlapped portion having a fixing area to fix the inside and outside end portions;

first and second cover members made of sheet material and fixed to said first and second open end portions of the trunk member, closing the openings of said open end portions; and

a tongue member which is provided at said outside end portion of the trunk member and exposed to an outside, and when a tensile force is applied, releases the fixing of the outside and inside end portions and partially releases the fixing of said first and second open end portions and said first and second cover members, thereby unsealing the sealed case;

each of said first and second cover members including a main part having the substantially same shape and size as that of the cross section of the opening of the trunk member, the main part having an outer surface and a peripheral end face and a ring-shaped rim projected from the outer surface of the main part and extended along the peripheral end face of the main part, the rim having an outer peripheral surface; and the main part of the cover member being located in each end portion of the trunk member, and the outer peripheral surface of said rim of the cover member is attached to an inside surface of the end portion in a surface contact manner.

2. The sealed case according to claim **1**, further comprising a sealing tape which covers an end-face of the inside portion of the trunk member and an area in the proximity thereof.

3. The sealed case according to claim **2**, wherein each of the sheet materials forming said trunk member and said cover members is made of a material having at least one of light-shield and air-tightness properties.

4. The sealed case according to claim **2**, wherein the sealing tape is provided along an entire length of the end-face of the inside portion of the trunk member and along the area in the proximity of the end-face.

5. The sealed case according to claim **1**, wherein each of the sheet materials forming said trunk member and said cover members is made of a material having at least one of light-shield and air-tightness properties.

6. The sealed case according to claim **1**, wherein said tongue member is integral with the material forming said trunk member, and projects outward from one end of said outside end portion of the material.

7. The sealed case according to claim **1**, wherein said trunk member has a slit which extends along the horizontal axis of the material and through which a tip of the tongue member is inserted into the trunk member, and after the case is unsealed, said tip of the tongue member is inserted through said slit, thereby re-sealing the case.

8. The sealed case according to claim **7**, further comprising a moisture-proof film fit to an inside of the trunk member so as to cover said slit.

9. The sealed case according to claim **1**, wherein said moisture-proof film is located between said first and second end portions, and has the same width as the distance therebetween; and both ends along the moisture-film extending direction are attached to the inside of the trunk member.

10. The sealed case according to claim **1**, wherein said rim projects at an angle of 90° from the main part.

11. The sealed case according to claim **1**, wherein the cross section of the trunk member is square, polygonal, circular, or elliptical.

12. A sealed case, comprising:

an elongated trunk member including an overlapped part made by overlapping at least parts of an inside end portion and an outside end portion of apart from each other in a vertical axis direction of a sheet material

having a vertical axis and a horizontal axis crossing the vertical axis, and first and second open portions each provided with an opening and apart from each other in a horizontal axis direction, and said overlapped portion having a fixing area to fix the inside and outside end portions;

first and second cover members made of sheet material and fixed to said first and second open end portions of the trunk member, closing the openings of said open end portions; and

a tongue member which is provided at said outside end portion of the trunk member and exposed to an outside, and when a tensile force is applied, releases the fixing of the outside and inside end portions and partially releases the fixing of said first and second open end portions and said first and second cover members, thereby unsealing the sealed case;

each of said first and second cover members including a main part having the substantially same shape and size as that of the cross section of the opening of the trunk member, and a rim provided in a circumference of the main part; and the main part of the cover member being located in each end portion of the trunk member, and said rim of the cover member is fixed to an inside surface of the end portion in a surface contact manner,

wherein said fixing area partially projects so that a part corresponding to the tongue member comes close to the tongue member.

13. The sealed case according to claim **12**, wherein each of the sheet materials forming said trunk member and said cover members is made of a material having at least one of light-shield and air-tightness properties.

14. The sealed case according to claim **12**, wherein the cross section of the trunk member is square, polygonal, circular, or elliptical.

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